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Original Articles

UTERINE MYOMATA COMPLICATING PREGNANCY.*

WITH CASES.

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The probability of conception by a woman who suffers from myomatous growths of the uterus will depend on their situation.

Growths of the submucous or interstitial varieties increase the disposition to sterility, not so much from the presence of the tumor as from the accompanying endometritis which is certain to be associated with intrauterine growths. Subperitoneal and interstitial growths which do not especially encroach on the uterine cavity should not interfere with the occurrence of conception.

One would naturally expect that uterine growths would partake of the greatly increased current of nutrition which is directed toward the uterus with the advent of pregnancy and become larger. In the majority of cases this is what occurs. A growth which has been quiescent frequently actively increases in size, while growths which were immature often under the stimulation of pregnancy attain very great size. The increase in size is not always a result of growth, but the tumor from a process of necrobiosis becomes edematous, presenting a condition in which fluctuation is so distinct that the examiner may suspect the existence of a cyst. The weight and growth of the tumor may cause the enlarging uterus to become impacted in the pelvis, or its growth may be so rapid that with the pregnant uterus the abdominal distension may be so great and the patient become so uncomfortable or the pressure symptoms so marked that operative interference becomes necessary to save the patient's life.

The complication of pregnancy by myomata would naturally be expected to be a cause of abortion or premature labor, but a study of the statistics of pregnancy does not seem to show an increase of the frequency of such interruption over what is found to occur in uncomplicated pregnancy. The occupancy of the uterine structure by a number of growths necessarily interferes with the rhythmical action of the muscle fiber and renders the uterine contractions feeble and ineffective. When the growths are situated in the fundus of the uterus or above the brim of the pelvis they may exert no influence on pregnancy; when below the brim in cervical growths, or in subperitoneal with a long pedicle, they may prove obstructive. The irregular and feeble contractions increase the frequency of manual or instrumental delivery of the fetus and of the placenta.

The danger to the patient is not ended with the termination of the labor. The irritation to which the growth of lowered vitality is subjected by the prolonged labor, the bruising which must occur during the instrumental and manual delivery, with the rapidly reduced nutrition which is associated with involution, must favor necrotic processes and consequently endanger the lives of both mother and offspring.

The possibility of such a train of disasters from which a married woman, the victim of myomatous growths, may be the sufferer should justify a prophylactic operation to avoid their occurrence. The character of the operation must necessarily be governed by the age of the patient, and especially by the number, size and situations of the growths. In subperitoneal and submucous growths in women under 35 years of age there should be no question of the wisdom of myomectomy in the majority of cases. In interstitial growths, when the tumors are moderate in size and few in number, enucleation should be selected. The greater the mutilation or spreading out of the uterine wall or when it has to be opened in a number of places in order to expose and remove the growths, the convalescence following operation must be more or less stormy, and one might very naturally question whether the cicatricial changes resulting in the uterus would render it fit to undergo the necessary evolution for the completion of pregnancy or afford sufficiently firm contractions to effect delivery and prevent postpartum hemorrhage.

That the ability to effect a safe delivery is not precluded by the enucleation of such growths has been made evident to me by four cases in my own experience, three of them during the course of pregnancy and one before the marriage of the woman, who has subsequently given birth to a child. The history of the latter is as follows:

Miss L., a Japanese woman, aged 33, patient of Dr. A. B. Shimer, of Atlantic City, came under my observation in February, 1903.

History.—Patient was suffering from a mass in the abdomen, which she ascribed to a blow received when a child. Her menstruation was regular, lasting about a week, rather free and occasionally associated with dysmenorrhea. She suffered some pelvic pain which increased in severity after she first noticed the growth in the previous August. An irregular nodular mass was found occupying the median portion of the abdomen, extending about two inches above the symphysis and a little to the left. The tumor was movable from side to side and rectal examination disclosed it as a part of the uterus, and the pelvis was also occupied by a growth. The uterus seemed to be so occupied by the growths that I advised hysterectomy.

Operation.—In the latter part of April, at St. Joseph's Hospital, an abdominal incision was made for the purpose of doing a hysterectomy, but as the growths were so situated in the anterior and posterior walls of the uterus that enucleation seemed possible, the growths, thirteen in number, were enucleated without opening into the uterine cavity. The anterior wall

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of the uterus was very much mutilated, but was quilted together, making a very respectable appearing organ. To avoid its falling back into the pelvis the fundus was secured forward by two turns of the continuous catgut, which closed the wound in the parietal peritoneum.

This patient developed an infection in the abdominal wound from which considerable pus was discharged. Four weeks subsequent to the operation a slough was withdrawn from the depths of the wound, which contained the catgut sutures employed to quilt together the wounds in the fundus of the uterus, after which the wound was closed rapidly, and she was discharged well, June 16.

Fig. 1.—Tumor, natural size, removed from the posterior wall of pregnant uterus without interference with its normal course.

Postoperative History.—For the following additional history I am indebted to Dr. Shimer: She was married Oct. 14, 1903, and gave birth to a healthy female child weighing seven and one-half pounds, Nov. 14, 1904. The presentation was vertex in an occipito-posterior position and consequently resort was had to forceps, by which the perineum was slightly torn. The laceration was at once repaired and the convalescence uneventful. She has enjoyed excellent health since the birth of her child.

This case is not quoted as a justification for imperiling the patient by so severe an ordeal, but as an evidence that a patient may have marked cicatricial changes produced in the uterus without rendering that organ incapable of performing its functions satisfactorily in a subsequent labor.

CONDITIONS THAT JUSTIFY INTERFERENCE DURING PREGNANCY.

The question in which we are more directly interested is what shall be done for the woman suffering from myomatous growths who has become pregnant? In deciding this question, the marvellous profundity of Nature's resources should not be forgotten and interference should be for urgent symptoms and not merely because of the presence of the growth. The conditions which would seem to justify interference during gestation are: 1, persistent and more or less continuous pain over the abdomen; 2, such rapid growth of the combined tumors and uterus that life is in danger from pressure on vital organs; 3, such a situation the growth as will make it a positive obstruction on the completion of pregnancy; 4, indications, hemorrhagic and otherwise, that abortion or premature labor is impending.

The first condition may result from impaction of the uterus or growth within the pelvis and the consequent pressure, and frequently may be obviated by efforts to displace upward the tumor while the patient occupies the knee-chest position. Such efforts should be practiced with the greatest prudence, as cases are recorded in which large veins in the wall of such tumors have been ruptured, causing fatal hemorrhage. The pain may result from partial rotation of the uterus when large tumors occupy the anterior and posterior walls of the uterus. Such a condition demands radical measures for its relief. Equally radical procedures will be demanded when the conditions are complicated by acute disease of the appendages and the appendix. When the uterus was previously the seat of large subperitoneal and interstitial growths, the increase in size from the normal growth of pregnancy plus that arising from the added nutrition of the tumors will often result in so enormous a distension that the functions of respiration, circulation and nutrition are so impaired as to demand prompt relief.

In the early stages of labor it is very difficult to determine that a growth situated even within the inferior zone of the uterus will necessarily prove an obstacle to labor,

Fig. 2.—Myomas occupying interstitial side of uterus while the opposite contains a three-months' fetus. Complete hysterectomy.

for very frequently such growths may be pushed or are drawn up by the expanding cervix. Danger of such obstruction may be inferred when the tumor is subperitoneal with a pedicle long enough to permit it to drag below the expanding body or when an interstitial

growth in the posterior wall permits the expansion of the uterine body above it. Such a growth of large size will prove a serious obstacle in a forthcoming parturition. Recurring bleeding with intermittent painful contractions indicates an irritation of the uterus which renders the expulsion of the uterine contents probable.

PROCEDURE.

What shall be the operative procedure? Experience has taught that artificial production of abortion or premature labor is more grave than the continuance of the pregnancy. Incidental disturbance of the growth by uterine contractions and by manual or instrumental interference, ineffective uterine contractions with subsequent retention of portions of membrane, fragments of placenta and blood clots, render the field more favorable for saprophytic or septic infection.

Hysterectomy, either complete or partial, without doubt, affords the procedure attended with the least mortality for the mother, but it absolutely dooms the other life and precludes all hope for offspring and, consequently, should be accepted only where there is no hope for the continuance of the pregnancy or when alternative measures are absolutely contraindicated.

Prior to the fifth month the existence of pregnancy does not form a bar to the enucleation of growths; on the contrary, the distension of the pregnant uterus renders the demarcation of the growth more distinct and its enucleation more readily accomplished.

The manipulation of the uterus required for the removal of the growth and repair of the wound does not seem to increase the tendency to expulsion of the uterine contents. Indeed, the improved nutrition of the uterus seems to favor more rapid repair of the injury.

The operative injury does not seem to exert any unfavorable influence on the subsequent parturition, as shown by the following cases:

Case 1.—Mrs. W., aged 27, a patient of Dr. D. S. Hollenbeck, of Shamokin, Pa., underwent operation at Jefferson Hospital, Feb. 25, 1902, for myomatous growths complicating pregnancy. The abdomen was very much larger than normal for a pregnancy of four and one-half months, and on examination a large growth was found on either side of the pelvis and the woman complained of almost continuous pain.

Operation.—The abdomen was opened and the uterus being brought out, presented a myoma five inches in diameter in the posterior wall, and a second two inches in the anterior. These growths had caused a rotation of the uterus so that they lay on either side of the pelvis, and to this was attributed the discomfort. Each of these growths was enucleated and the raw surfaces with some difficulty covered with peritoneum. The uterus was returned to the abdomen and the wound closed with continuous catgut in the peritoneum and aponeurosis, and interrupted silkworm through all the tissues above the peritoneum.

Postoperative History.—Convalescence was uninterrupted and her physician informs me she was delivered at term, of a child weighing thirteen pounds, after a somewhat prolonged labor. Her subsequent convalescence was normal and health good.

Case 2.—Mrs. L. B., aged 33, a patient of Dr. J. R. Montgomery, of Buckhorn, Pa., was operated on at my clinic, at Jefferson Hospital, Nov. 2, 1902.

History.—Besides a hard tumor filling up the pelvis, surmounted by a more elastic mass above, the character of which could not be definitely determined, she was a victim of Graves' disease, having a large tumor of the thyroid gland, a mitral murmur and a pulse of 140.

Operation.—The administration of an anesthetic was deemed too grave an undertaking, so the abdomen was opened under spinal anesthesia. The exposure thus secured, revealed that the elastic mass was the fundus of the uterus, occupied by a three months' fetus. The bladder had been dragged up and was lying over this portion of the uterus. After walling back the intestines the hard tumor was drawn from the pelvis by the traction of a myoma screw, and was found to occupy the greater portion of the posterior uterine wall. After this enucleation an opening in the peritoneum three inches in diameter was left, which was closed by quilting together the uterine wall with continuous catgut covered with a similar suture in the peritoneum. The uterus was replaced in the abdomen and the wound closed. The tumor was found necrotic. The patient left the hospital, December 6, in good condition, having had an undisturbed convalescence.

Postoperative History.—A letter from Dr. Montgomery, written Oct. 26, 1903, informs me that she completed her pregnancy without disturbance, had a normal labor, and that both mother and child were in excellent health.

Case 3.—Mrs. N., a patient of Dr. E. E. Graham, of Philadelphia, underwent operation at St. Joseph's Hospital for pregnancy complicated by a fibroid in the uterus.

Operation.—The tumor was situated in the pelvis, having developed in the posterior wall and was with considerable difficulty raised from the pelvis (Fig. 1). The capsule was incised and the tumor enucleated, bleeding vessels were secured by catgut ligatures and the tissues quilted together with the same material and the peritoneum closed over it by a separate suture.

Postoperative History.—Like the others, her convalescence was very satisfactory. She was delivered at full term of a living child, April 27, 1905, twenty-eight weeks following the operation, and has since enjoyed good health.

In all of these cases the irritability of the uterus was controlled by the use of morphin for the first few days subsequent to the operation.

Fortunately, the cases are infrequent in which it will be found necessary to operate during the course of pregnancy, but the danger to the patient and the responsibility of the attendant without operation will often be greater than that experienced when operation has been done as in three of the cases above cited.

DISCUSSION.

Dr. Augustus P. Clarke, Cambridge, Mass., said that in a series of 1,000 cases of labor he met with only 1 case in which there were two subperitoneal fibroids, each tumor having a preternaturally long pedicle. The patient was 33 years old, and when first seen was four months pregnant. The pregnancy was allowed to go on to full time. The labor was natural and not attended with any mishap. The patient subsequently had two other labors, each at full term and normal in course. The patient, nevertheless, suffered subsequently from the pressure of those fibroids and their unfavorable action was mainly exerted on both ureters and the kidneys, causing chronic inflammation and contraction of those organs and general edema, which led to a fatal result. The autopsy showed that both fibroids had undergone calcareous degeneration, and that an early resort to surgical measures undoubtedly would have saved the patient much suffering and have afforded her many years of usefulness and enjoyment. Dr. Clark said that rapidly growing interstitial or subserous fibro-myomata should, when practical, be removed as early as possible. He has had many such cases in which operative measures have proved most satisfactory. He said it is surprising to note how many women have been the subjects of uterine myomata and became pregnant and, unless the tumor assumed a rapid growth, went through the labor without meeting with any untoward consequences. A preternaturally long pedunculated uterine myoma, in his experience, is to be considered a dangerous growth.

Dr. H. J. Boldt, New York, speaking of the liability of abortion occurring if a myomectomy be done during gestation, said that that depends on the individual experience. One operator will never gather enough material to decide definitely for the profession. So far as his experience goes, he has found that pedunculated and subperitoneal tumors are not likely to cause abortion if operated on during gestation. Others are

always likely to cause abortion. No matter how likely the appearances are that a woman is likely to have obstruction during confinement, it rarely occurs; and unless there are positive indications we should not interfere in any way with the pregnancy and not consider the induction of abortion.

Dr. A. H. Tuttle, Cambridge, Mass., referred to two cases of pregnancy complicated with uterine myomata. In the first case the patient was very much upset with symptoms of inflammatory and strangulatory complications, which progressed until, when in about the fourth month of her pregnancy, it was deemed necessary to make an exploratory incision and determine the exact condition of things. A diffuse myomatous condition of the posterior wall of the uterus was found which interfered with the upward extension of the organ. With gentle manipulation the uterus was loosened and raised from the pelvis and the abdomen closed without further treatment. In spite of the fact that the manipulations of the uterus were of the most gentle nature, severe contractions set in and seriously threatened to terminate the pregnancy. Under full doses of opium this complication was controlled, and the case progressed to term without further trouble. A difficult labor was rewarded with a living child, and since the uterus has been removed.

The second case presented four uterine myomata on the anterior surface. The largest, of about hen's egg size, was undergoing gangrenous changes when it first came under his notice, and the indications for their removal were complete. The mother was then between four and five months pregnant. The tumors were completely removed, every care being exerted not to disturb the uterus. The parts healed by primary union without any complication, and a perfectly normal child was delivered at term.

From the total absence of contraction pains and complications in the second case where there was surgical interference without manipulation of the uterus, and the presence of severe contractions in the first case where there was no surgical treatment but considerable manipulation, it would seem that much manipulation of the pregnant uterus will not be tolerated and that in the surgical treatment of the gravid uterus, handling or disturbing the position of the uterus should be avoided as much as possible.

Dr. A. E. Benjamin, Minneapolis, said that there are three indications for operating on these cases. First, the pain experienced; second, the location of the tumor; and third, degeneration. A great many of these women complain of pain which gradually increases, with symptoms of abortion. Two cases of this sort he operated on without any trouble following. He had one degenerative case. The patient made a good recovery. Dr. Boldt referred to the position of the tumor. In one case with a large tumor filling the pelvis, death of the child resulted, because the attending physician was unable to deliver the child without crushing the head. The woman passed through the ordeal and later came to operation. This tumor was so large and fixed low in the pelvis that it seemed almost impossible that a child's head could pass through the opening.

Dr. J. H. Carstens, Detroit, said that if the tumor is at the fundus he lets it alone; if it is down low it ought to be enucleated, or if it is in the posterior cul-de-sac and adherent, it must be operated on. If it can be lifted over the brim of the pelvis, operation is unnecessary. Sometimes a tumor is found between the uterus and the bladder. A tumor at this point grows rapidly and interferes with the process of delivery. These tumors may be removed by vaginal section.

Dr. S. P. Warren, Portland, Me., said that the first Cesarean section made in Maine was performed for a fibroid complicating delivery. He has seen but two cases in an obstetric practice of thirty years in which fibroids obstructed labor; one case was associated with eclampsia and acute nephritis at the sixth month, the mother dying of sepsis a week postpartum, and the other case required craniotomy before delivery. At the second labor of the same woman there was no fibroid found in the uterus. She had not been operated on for it, but the fibroid, which was as large as a child's head at the first, had entirely disappeared at the second labor.

Dr. C. C. Frederick, Buffalo, N. Y., has seen five cases of pregnancy complicated with fibroids in the last ten years. He agreed with Dr. Carstens that fibroids below the ileo-pectineal line, if seen early enough, should be enucleated or Cesarean section must be resorted to. He has had the same experience with fibroids at the junction of the cervix and body. These should also be enucleated. In answer to the question last asked, he has twice seen labors with fibroid tumors in which the tumor was discovered at the time of the labor, and in both these cases the tumors were absorbed or disappeared, leaving only a little nodule. What occurs is a simple process of absorption during involution.

Dr. W. B. Dorsett, St. Louis, Mo., referred to a case in which he wanted to do an enucleation, but found the tumor holding the uterus down under the promontory of the sacrum. He was unable and afraid to remove it because it seemed to dip too deeply down. He simply delivered the uterus from the pelvis and the woman went on to labor. He said that a great many ovarian tumors are removed during pregnancy, and they are probably attended by more danger to the life of the child than when a myomectomy is done, because the nerve supply is more apt to be interfered with and as a result miscarriage occurs. In the case of a soft myomatous tumor the question of operation depends on the individual case.

Dr. Miles F. Porter, Ft. Wayne, Ind., differed with Dr. Carstens. He thinks that any tumor, no matter where it is located, that is likely to interfere with pregnancy or labor, should be removed by operation. He has seen a pregnant woman who also carried an eight pound fibroid, but the abdomen would not carry both, hence the tumor was removed, the child was carried to term and born without accident.

Dr. E. E. Montgomery, Philadelphia, was in hearty concord with those who advocated non-interference in these cases unless there are absolute indications for interference. He said that it is true that in the subsequent development of pregnancy, the distension of the uterus would lift the tumor out of the pelvis and not interfere with delivery. It is only in the early stages of pregnancy that enucleation should be performed. With regard to the tumor being an interstitial one, in all three of his cases the tumors were interstitial, and at least two-thirds of the uterine wall was entered, and in one the opening was nearly five inches across the denuded surface. It seemed as though the fetus, covered by little more than a membrane, was projecting through. The patient recovered without marked inconvenience and later gave birth to a 13-pound child. These tumors are very vascular and great pressure may lead to rupture of the vessels and hemorrhage and even death of the patient. If the patient is not suffering inconvenience from the too great size of the tumor, he should prefer her to go on to the completion of the pregnancy.

EXCISION OF CANCER OF THE HEAD AND NECK.

WITH SPECIAL REFERENCE TO THE PLAN OF DISSECTION BASED ON ONE HUNDRED AND THIRTY-TWO OPERATIONS.*

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Though signal advances have been made recently in many surgical problems, the treatment of cancer of the head and neck has, it would seem, neither received the attention nor kept the pace of progress in other fields. These unhappy cases are too often regarded as specters at the clinic. The operative treatment is hampered by tradition and conventionality, and the tragic ending of so large a proportion of these cases has held back lay and even professional confidence.

In this paper it is intended to present an outline sketch of the conclusions regarding the surgical treat-

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ment of cancer of the head and neck in the curable stage. The etiology, the diagnosis and the pathology will not be considered. It is generally admitted that cancer is primarily a local disease. Each case, then, is presumably at some period curable by complete excision.

The immediate extension from the primary focus is principally by lymphatic permeation and metastasis in the regional lymphatic glands. Secondary foci in distant organs and tissues are probably due to cancer emboli. A careful study of 4,500 cases, exclusive of the thyroid gland, traced to their original report in literature, made for me by Dr. Hitchings, showed that in less than 1 per cent. have secondary cancer foci been found in distant organs and tissues. That is to say, in cancer of the head and neck, death almost always occurs by local and regional development of the disease. The collar of lymphatics of the neck forms an extraordinary barrier through which cancer rarely penetrates (Figs. 1 and 2). Every portion of this barrier is surgically accessible. Paired organs or distinctly one-sided foci usually metastasize regularly, while unpaired organs, as the tongue, or the mesial tissue, such as the nose and the middle of the lip, metastasize irregularly (Fig. 3).

Fig. 1.—(From Gray, Poirier, Cuneo and Toldt.) The distribution of the superficial lymphatics. A, Posterior auricular glands. B, occipital gland. C, superficial cervical gland. D, submaxillary gland.

After the lymphatic stream has been blocked, as by carcinomatous invasion, it may flow in any direction and every sort of irregularity in the further metastases may follow, but always somewhere within the accessible lymphatic collar. After all, how much more favorable such distribution is than that of certain other organs, as, for instance, the breast with its thoracic and abdominal metastases, the stomach and intestines with their inaccessible retroperitoneal metastases?

What, then, is the best method of surgical attack? An incomplete operation disseminates and stimulates the growth, shortens life and diminishes comfort. Local excision of the primary focus only is as unsurgical as excision of a breast, leaving the regional glands. Excision of individual lymphatic glands, as one would excise a tuberculous gland, not only does not afford permanent cure, but is usually followed by greater dissemination and more rapid growth. Judged by analogy and experience, the logical technic is that of a "block" dissection of the regional lymphatic system as well as the primary focus on exactly the same lines as the Halstead operation for cancer of the breast. Such a dissection is indicated whether the glands are or are not palpable. Palpable glands may be inflammatory and impalpable glands may be carcinomatous. A strict rule of excision should, therefore, be followed (Figs. 4 and 5).

In the last 63 cases we have divided them into two classes: (a) those in which the lymphatics were obviously enlarged, (b) those in which they were not enlarged. The enlarged lymphatics were presumed to be carcinomatous (this was, of course, not always correct). In this group the lymphatic-bearing tissue was widely (the entire lymphatic-bearing tissue of that side) excised, because when once the lymph stream is choked by metastasis further dissemination may travel in any direction. When there are no palpable glands the lymphatic drainage area only is excised.

Fig. 3.—(Gray.) Emphasizing the venous tree, easy to excise in toto but difficult to dissect individually from lymphatics.

Next in importance to the block regional and local excision is that of a strict avoidance of all handling of carcinomatous tissue so long as the lymphatic channel remains intact, thereby avoiding further dissemination of the growth. Retraction should be entirely on sound tissue and blunt dissection should be the exception.

If the foregoing be mainly true, what, then, are the salient features of the plan and technic, and what are the principal dangers to be avoided? We shall not here con-

sider the preliminary preparation of the patient nor the after-care, but shall address ourselves to the immediate operative problem as to how to secure the highest immediate recovery rate and the most probable permanent cure. What, then, are the immediate dangers attending such operations? Infection, local and broncho-pulmonary, stands first, then hemorrhage, shock and exhaustion.

Infection.—In the present status of surgery, infection may be dismissed without discussion in all clean dissections of the neck in which the wound does not communicate with the mouth, the air passages or the esophagus. The greatest infection risk exists when an extensive dissection wound of the neck communicates with the mouth or air passages, as in cancer of the tongue or of the larynx. In the latter instance experience has emphatically taught us that the primary wound in the neck should not be made at the same time that the larynx is excised. A preliminary tracheotomy is doubly indicated, as, aside from the short circuiting of respiration and fixing the trachea, it produces a wall of protective granulations across the top of the dangerous mediastinal area. After the establishment of this barrier, together with the superficial treatment of the stump of the trachea, but little risk of broncho-pulmonary infection remains.

Fig. 4.—(From Poirier and Cuneo.) In cancer of the tongue the metastases extend well down as this cut illustrates. Sometimes the first point of metastasis is in the gland lying between the internal jugular and the omohyoid. A, posterior belly of digastric. B, submaxillary gland. C, thyrohyoid. D, omohyoid. E, sternohyoid.

In the case of the tongue the operation is best made in two stages. It is now well known that the immediate and perhaps the most important factor in the causation of broncho-pulmonary infection in operations within the mouth is the inspiration of blood at the time of the operation. This may be absolutely prevented by the adoption of a simple method which I have heretofore described in the *Annals of Surgery*. The method consists of passing closely fitting rubber tubes through the nares into the pharynx, opposite the epiglottis, then close gauze packing of the pharynx, after drawing the tongue well forward. With the exception of operations requiring the removal of the entire base of the tongue, complete control of blood inhalation is thereby accomplished. Incidentally, this separates the surgeon and the anesthetizer, permitting each to do his work unhampered by the other. Mucus that otherwise might collect in the throat is absorbed at once by the gauze packing. The prevention of vomiting is almost wholly under the control of an even anesthesia. The many other features of the prevention of infection will not here be considered.

Hemorrhage.—The control of hemorrhage is important on its own account and almost equally on account of the maintenance of a dry field, affording opportunity for a clean and precise dissection. The arterial hemorrhage is best controlled by temporary closure of the common or external carotid artery. Permanent closure of the common carotid, on account of the high percentage of cerebral softening in the cancer period of life, should be avoided. Permanent closure of the external carotid, while it is not attended by this risk, carries with it approximately a 2 per cent. mortality rate from the washing away of the thrombus of the ligatured stump, causing cerebral embolism. At all events, it is unnecessary. In 61 cases I have temporarily closed the common or the external carotid without immediate or remote complications. Proper closure of this vessel should be attended with little more risk of thrombosis or embolism than closure by tourniquet or by pressure applied on the skin. This part of the technic must be done with absolute gentleness, the lumen merely closed, the walls not compressed. The troublesome venous hemorrhage may be minimized by placing the patient in the partial upright posture with a sufficient even pressure on the lower extremities and the trunk up to the costal borders to prevent gravitation of blood. Probably the most convenient means for accomplishing this is by my rubber pneumatic suit. By this device almost any posture may be assumed without serious risk of cerebral anemia by gravity. It is interesting to note the collapse of the veins as the patient is taken from the horizontal to the head-up inclined posture. In atheromatous subjects, presenting a high blood pressure, I have seen marked hemorrhage, even pulsating hemorrhage, from the branches of the external carotid when the common was closed. This is easily demonstrated to be due to the passing of the blood of the opposite artery through the brain, causing a reverse stream through the internal carotid of the clamped side to the bifurcation of the common, then up the external carotid, causing pulsating hemorrhage from the branches of the latter. When this occurs, as soon as the external has been exposed, its

Fig. 5.—An incision which exposes the regional lymphatics which are excised in cases of lateral cancer of the lip without palpable metastases. After metastases have occurred, excision of the entire lymphatic bearing tissue of the side of the neck should be done.

lumen may be closed by a clamp, thereby ending the reverse as well as the direct stream of blood.

Shock and Collapse.—In these extensive operations prevention of shock and collapse may be effectively accomplished. The important shock-producing factors are: the number and intensity of surgical contacts, as forcible retraction, vigorous and repeated sponging, blunt dissection, tearing, etc.; the loss of blood; mismanaged anesthesia, and the duration of the operation. The principal factors causing collapse are: interference with the trunk and certain branches and terminals of the vagus, excessive hemorrhage, air emboli and anesthetic accidents.

To minimize the foregoing, the operative field should be subjected to the very minimum trauma by the employment of ample operative space, sharp dissection, minimum retraction, by preserving the field free from blood and minimizing the sponging. The loss of blood

Fig. 6.—(Continuation of Fig. 5.) The regional lymphatic bearing tissue is removed by a block dissection, leaving the salivary gland in the cases in which the lymphatics are free from metastases, and excising it when any of the regional glands are involved. A, submental. B, facial veins and artery. C, gustatory. D, digastric. E, submaxillary. F, platysma. G, parotid gland. H, lingual. I, digastric. J, sternocleidomastoid.

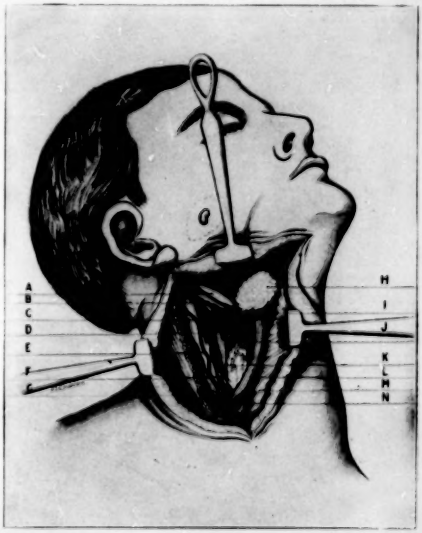

Fig. 7.—Drawing from a case of epithelioma of the face near the ear. There were no palpable glands. The local block dissection here included a portion of the sternomastoid so as to afford a better exposure of the parotid group of glands, thereby protecting against injury of the facial nerve or the jugular. In this instance the lower part of the parotid gland was excised. The submaxillary was left. A, sternohyoid. B, digastric. D, internal carotid. F, carotid. G, sternocleidomastoid. H, submaxillary gland. I, hypoglossal. J, thyrohyoid. K, external carotid. L, omohyoid. M, platysma. N, internal jugular.

may be reduced to a minimum by methods already suggested. A hypodermic injection of atropin is given half an hour before beginning the operation for the purpose of paralyzing the nerve endings of the vagus in the heart, thereby wholly preventing an inhibitory collapse from direct or reflex inhibition through the vagus or its branches and controlling bronchial secretion. Morphin favors quiet anesthesia and partially supplements the general anesthetic. By taking advantage of the distribution of the sensory nerves, the supply of which is rich in the skin and superficial fascia while scanty in the deeper planes of the neck, but little ether, in addition to the morphin, is required during the latter dissection. This is analogous to the ether-morphin anesthesia in certain prolonged abdominal technics, in which the less painful part of the operation is done principally under the morphin factor of the anesthetic alone. The factor of hemorrhage may now be practically eliminated, and with it air embolism.

In operations on the tongue it is well to remember that the lingual arteries may be closed by the firm pressure of the gauze packing at the base of the tongue in the technic of tubage. In neck dissections the desired standard of the technic is attained when the field is so clear that the minute tissues, such as individual lymphatic vessels, are clearly and distinctly seen, and when one would not expect to damage even the sympathetic nerve unintentionally.

In estimating the possible shock, collapse or exhaustion, it is well to bear in mind that in the cancer period of life there are apt to be cardio-vascular changes of importance. A high degree of atheroma, a senile heart, or a chronic myocarditis are all important factors which should be met before the day of operation by such therapeutic measures as digitalis, nitroglycerin, etc., as may be indicated. Unless these factors are anticipated but little can be done in the midst of an operation toward their mitigation. When the wound is large, one must not forget the importance of moist saline compresses to prevent the effect of exposure to the air.

The practical application of the foregoing data may be illustrated in the technic for the excision of carcinoma

of the floor of the mouth invading the lower jaw with extensive metastases in the submaxillary lymphatic glands. In this instance one would be compelled to take the double risk at one seance. Assuming all preliminary preparations to have been made, the patient is given an injection of 1/4 morphin and 1/100 atropin half an hour before beginning of anesthesia. After completion of anesthesia the pharynx is cocainized to prevent reflex inhibition from manipulation; two rubber tubes closely filling the nares and having perforations at the distal end are pushed down to the level of the epiglottis, the tongue is then drawn well forward, a large piece of gauze packed firmly into the pharynx, completely filling it, the brunt of the packing being made at the sides of the tubes, preventing their compression; the patency of the tubes and easy respiration is readily verified; a T-tube is then connected up with an inhaler and the anesthetizer takes his place a foot or more from the field of operation, giving him the opportunity of continuing an

Fig. 8.—(Continuation of Fig. 7.) A method of closing the deeper plane of the neck by suturing the longitudinally split border of the sternomastoid to the platysma and the digastric. A, subiary gland. B, posterior belly of digastric. C, platysma. D, sternomaxillary gland. B, posterior belly of digastric. C, platysma. D, sternomastoid.

even, uninterrupted anesthesia, allowing the surgeon full control of the operative field, absolutely preventing the entrance of any blood into the pulmonary tract, and permitting the operator to place the patient in any position he wishes.

The rubber suit has been placed and laced during the administration of the anesthetic, and is now sufficiently inflated to merely support the circulation of the extremities and the abdomen up to the costal arches. The patient is then placed in the inclined posture, head up, and the skin incision over the common carotid artery just above the clavicle is made (Fig. 6). The artery is exposed by an intermuscular separation of the sternomastoid, its outer sheath nicked, the vessel exposed and temporary closure made. The complete skin incisions are then made, the skin reflected back over the entire area of the field. The sternomastoid is divided, the internal and the external jugulars are secured, tied double and divided at the base of the neck (Fig. 7). The dissection is then carried from below upward into the deep plane of the neck behind the lymphatic glands, working first at the sides, then posteriorly, carrying upward all the fascia, muscles, veins, fat and connective tissue until the floor of the mouth is reached (Fig. 8). The lower jaw is then divided at a safe distance on each side of the growth. The floor of the mouth and the border of the tongue are then similarly divided, completing the block.

In very critical cases, an assistant experienced in the use and purpose of the sphygmomanometer is placed in charge of the management of the circulation. If the pressure falls below a certain point the pneumatic pressure is increased, and after the operation the suit is gradually decompressed, but in operations in the mouth in which there may be some oozing, and in which the posture of the patient may measurably prevent inhalation of blood, by continuing the rubber suit the patient may be allowed to come out of the anesthetic in the head-up posture. The pneumatic suit may be gradually decompressed after the circulation has reached a safe physiologic status.

Clinical.—My experience consists of 132 operations for cancer of various parts of the head and neck. A study of the literature convinces me that one could obtain the safest conclusions from his own experience, as it is impossible to get a precise knowledge of the plan, purpose and descriptions of the work of other surgeons. I have, therefore, depended largely on my own tables for my conclusions.

Fig. 9.—Skin incision for block excision of the gland bearing tissue of the entire side of the neck. A procedure always done when glands are involved.

In the first part of this series we now appreciate as we could not then, that incomplete operations do more harm than good. Our principal errors on this point consisted in the removal of individual glands, in allowing insufficient space for the dissections, in regarding hemorrhage too lightly, in handling carcinomatous tissue, in limiting the dissection only to tissues known to be infected; in short, in not doing a complete, comprehensive operation. The early and vigorous return growth clearly proved the fallacy of our technic. Experience, too, more clearly taught us what cases should be considered inoperable. We have never seen benefit from excising a recurrent malignant tumor which had transgressed lymphatic glands and freely invaded the deeper planes of the neck. If, on the other hand, the deep planes were free and the skin involved, there still remained hope of cure.

Superficial epitheliomata in aged subjects, appearing on various parts of the skin of the face, usually about the nose, rarely metastasize. The block dissection when done in cases in which the lymphatic glands of the neck are already involved, is most radical. In all these the key to the situation is the complete ex-

Fig. 2.—(Modified from Gray and Cuneo.) The intimate relationship between the venous and the lymphatic systems and the difficulty of entirely excising the lymphatic system and leaving the venous intact. Also how easily both may be excised together.

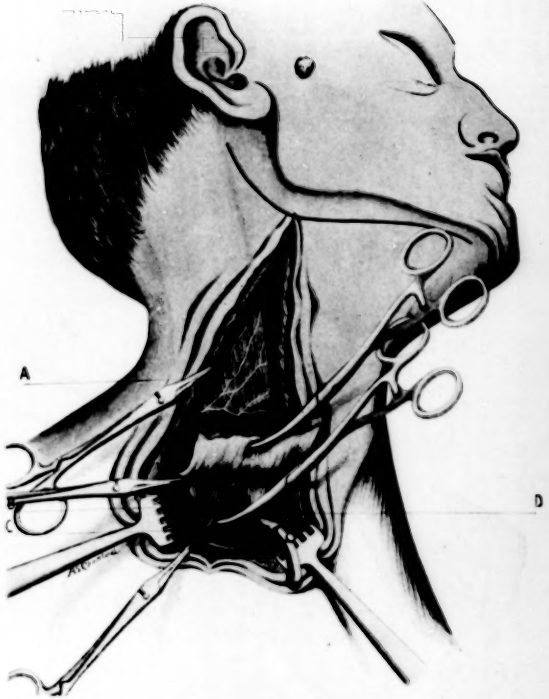

Fig. 10.—The sternomastoid is divided near the clavicle. The vein is exposed, tied in two places, and divided. The carotid is closed with the author's special clamp. The skin and platysma are then dissected back on the entire side of the neck. The deep plane of the neck down to the region having no lymphatic gland tissue is opened from below and laterally upward, and the relation of the sternomastoid muscle and the cervical fascia is noted. The most complete exposure of the deep lymphatics is afforded by a complete excision of this muscle. This and the following cut suggest again the necessity of doing a dissection in planes parallel to the surface. A, sternocleidomastoid. B, external jugular. C, internal jugular. D, common carotid.

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ILLUSTRATING ARTICLE BY DR. GEORGE CRILE.

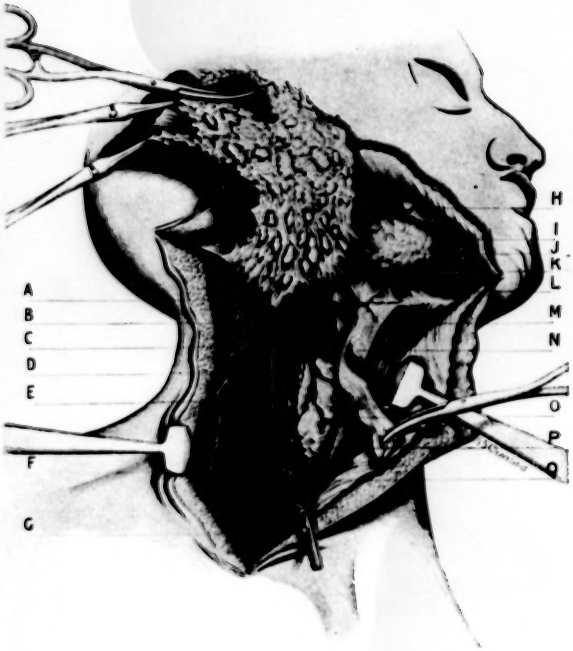

Fig. 11.—The entire mass of lymphatic gland bearing tissue is excised *en bloc*, and handled as little as possible. This dissection becomes easy when followed in the deep plane. The entire block of tissue is finally divided above, including the vein. A, splenius. B, hypoglossus descendens. C, spinal accessory. D, elevator ang. scapuli. E, pneumogastric. F, scalenus posticus. G, internal jugular. H, facial vein and artery. I, submental. J, submaxillary. K, digastric. L, mylohyoid. M, sternohyoid. N, omohyoid. O, thyroid gland. P, thyrohyoid. Q, carotid.

Fig. 12.—(Drawn from life.) Complete block excision of the regional lymphatic system. Note complete removal of all tissue lying between the platysma and the deep muscular plane in which no lymphatic glands lie. The artery and nerves remain. The excised block includes fascia, fat, salivary and part of the parotid glands, sternomastoid, omohyoid, part of the stylohyoid, the entire venous system, and all the lymphatic vessels and glands in this region. This is quite as comprehensive and complete as the Halstead excision of the breast. A, digastric. B, sternocleidomastoid. C, spinal accessory. D, splenius. F, elevator anguli scapuli. G, pneumogastric. I, internal jugular. J, stylohyoid. K, mylohyoid. L, digastric. M, omohyoid. N, sternohyoid. O, platysma. P, thyroid gland. Q, carotid.

cision of the internal jugular vein (Fig. 2). In one case both the internal and external jugulars of one side were excised their whole length from the bottom to the top of the neck; when, several months later, metastasis appeared on the opposite side of the neck, a similar excision of both veins was made on this side also, but only after it was discovered what the compensating route for the return circulation was. It was found that some of the superficial branches of the jugular had assumed the size of the internal jugular and were evidently the principal veins of compensation. Following the excision of the internal and external jugulars of the opposite side of the neck there was not the slightest circulatory disturbance, congestion, or any hint of insufficient return circulation (Fig. 9).

Since the adoption of the plan and practice as here described, in 1898-1899, we have seen most encouraging results not only in the immediate recovery rate, but in the permanent cures. We have now apparent cures in patients in whom at the time of operation, various stages of cervical metastases were demonstrated. Among them was a case that was so large and so extensively involved the skin that the patient's physician lanced it, supposing it to be an abscess. This has passed the three-year period. Better selection of cases and improved technic have materially reduced the immediate mortality rate.

It is not intended here to assume that all cancers in the various tissues of the head and neck are alike curable, but when once the lymphatics of the neck are involved the surgical problem and the risk are independent of the location of the primary lesion.

SUMMARY OF AUTHOR'S OPERATIVE CASES.

NUMBER OF CASES, 132.

Age.

Mean age 50, youngest 28, eldest 77; 90 observations.

Cases between ages of 20 and 30 years	4
Cases between ages of 30 and 40 years	14
Cases between ages of 40 and 50 years	21
Cases between ages of 50 and 60 years	18
Cases between ages of 60 and 70 years	20
Cases between ages of 70 and 80 years	6

SEX AND SOCIAL STATE.

Females, 15; males, 96. Married, 40; single, 10.

LOCATION OF PRIMARY FOCUS AND IMMEDIATE RESULTS.

Location.	Operations.	Recoveries.	Deaths.
Epithelioma lateral margin eye	6	6	0
Carcinoma of face (including maxilla)	15	14	1
Carcinoma of lips	31	31	0
Carcinoma of floor of mouth	4	1	3
Carcinoma of soft palate	1	1	0
Carcinoma of alveolar process	2	2	0
Carcinoma of pharynx	1	1	0
Carcinoma of tongue	12	10	2
Carcinoma of tonsil	2	2	0
Carcinoma of nose	5	5	0
Carcinoma of scalp	2	2	0
Carcinoma of lymphatic glands	23	20	3
Carcinoma of parotid	5	5	0
Carcinoma-branchiogenic	4	4	0
Carcinoma of larynx	15	13	2
Carcinoma of thyroid	4	4	0
	132	121	11
			8 per cent.

OTHER DATA.

Mean duration of disease prior to operation, 1 year. In the last 21 operations there has been no fatality.

Total number of cases operated	132
Total number of cases traced	106
Number of these known to be living	47
Number of these that did not have radical block dissection	96
Number of these operated over 3 years ago	67
Number of these traced	48
Number who have passed 3 years	9
Number of radical block dissections	36
Number of block dissections over 3 years	19
Number of these traced	12
Number of block dissections of patients living who have passed the 3 year period	19

0 to 1 year	5	6 to 7 years	1
1 to 2 years	5	7 to 8 years	0
2 to 3 years	0	8 to 9 years	0
3 to 4 years	2	9 to 10 years	0
4 to 5 years	3	10 to 11 years	1
5 to 6 years	3		

Number that did not have block dissections now living 28

0 to 1 year	6	4 to 5 years	3
1 to 2 years	10	5 to 6 years	2
2 to 3 years	3	7 to 8 years	0
3 to 4 years	0	16 to 17 years	1

There were twenty-three operations for cancer metastases in the cervical lymphatics following operations for the excision of the primary focus alone. Some of these were in my own early cases in which I was led to excise only the primary focus, either by the pleading of the patient or because the trifling primary lesion scarcely seemed to warrant excision of the regionary lymphatics (Figs. 10 and 11). The majority have been drawn from other sources. It would seem that the end results in this class of cases are the real test of the effectiveness of any method. The end results here are certainly equal to that of cases of axillary involvement in breast cancer. Increasing experience confirms us more and more in the belief that there has been too much conventionality in the technic. The evolution of the technic has so much minimized the operative risks that the chief consideration at present may be given to the complete excision of the last vestige of the disease along the lines of the principles underlying operations for cancer in general.

I would direct especial attention to the fact that among the 48 traced cases operated on more than three years ago, in which the radical block dissection was not made, nine are living; while among 12 traced cases among the block dissection cases operated on more than 3 years ago nine are living. The radical block dissection has, therefore, shown itself to be four times more effective than the less radical (Fig. 12).

Our general conclusions are that, since the head and neck present an exposed field, cancer here, unlike that of the stomach, the intestines, or even the breast, may be recognized at its very beginning; that every case is at some time curable by complete excision; that the field of regional metastases is exceptionally accessible; that cancer rarely penetrates the extraordinary lymphatic collar of the neck; that the growth tends to remain here localized; that by applying the same comprehensive block dissection as in the radical cure of breast cancer and by freely utilizing the modern researches of surgery the final outcome in cases of cancer of the neck and head should yield better results than that of almost any other portion of the body.

DISCUSSION.

Dr. H. M. S. Dawbarn, New York City, took a somewhat different ground, though with the same object in view, the prevention of hemorrhage. Although he has tied the external carotid artery over 100 times, he does not expect to tie this artery hereafter with any such frequency. In the June number of the *International Journal of Surgery*, he said, he gave his technic and reported four cases of brain operation with so little hemorrhage that the artery forceps were hardly needed at all, and in which for half an hour at a time the anesthesia could be laid aside because the patient was lying there with just such an anemia of the brain as is present in normal sleep. By constricting the limbs at the junction of the body tightly enough to accumulate blood in them, there results partial anemia of the head and trunk, and then there is no need of the rubber suit or the posture described by Dr. Crile. There is also very much less pressure at the mouth of the cut vessels. By this simple procedure one can operate in the most vascular region almost without any severe bleeding at all. Such usually bloody operations as excision of the upper jaw and removal of adenoids can be performed comparatively bloodlessly. It is carrying out the same principles in head, neck and trunk, as is done in operations on the extremities by bleeding into the trunk. When operating on the trunk he advised bleeding into the extremities. As soon as the tourniquet is released, as an essential corolary, Dr. Dawbarn applies boiling water by means of gauze wrung out of it with thick rubber gloves. The surface is blanched at once and then there is not that bleeding that ordinarily follows the release of the tourniquet.

If skin and mucous membranes are avoided, the heat will never be found injurious even to delicate tissues.

Dr. D. N. Eisendrath, Chicago, said that in every operation it is essential to remove the lymphatics which drain the field of operation. There are, however, early cases, he said, where it is hardly justifiable to adopt the thorough blocking method Dr. Crile suggested, where a less radical procedure is preferred. Three years ago he began in every case of carcinoma of the lips and tongue to remove the lymphatics in a thorough manner. In these cases nine-tenths practically of all the lymphatic drainage is toward the glands which lie in the submental region between the two anterior pillars of the digastric muscles and in the submaxillary lymph glands lying on the capsule of the salivary gland and within the gland itself. In every case of that kind it is necessary to remove all of the contents of the submaxillary triangles on both sides of the neck at the primary operation, and this should be done as thoroughly as possible, removing not only the fat and fascia, but also the submaxillary and salivary glands. In carcinoma of the tongue surgeons ought to adopt a procedure almost as radical as that mentioned by Dr. Crile. The lymph drainage from the tongue not only goes into the glands into which the lip drains, but also into the deep glands under the sternocleidomastoid muscle, and in some instances even into the glands of the parotid region itself. In these cases one ought to make an incision something like Dr. Crile described. The incision Dr. Eisendrath makes in these cases is slightly different from Dr. Crile's incision. He begins midway between the lower border of the lower jaw and the upper border of the thyroid, from one sternocleidomastoid muscle to the other. By retracting the flap he completely exposes the submaxillary triangles. When the incision is extended this is done from the upper angle of the transverse incision, i. e., from the middle of the sternocleidomastoid muscle down to the clavicle. This enables him to remove every gland from around the muscle without resecting it. In case the internal jugular is involved, it is well to respect that also. Dr. Eisendrath said that no surgeon should content himself simply by removing the primary growth and then dismissing the case. He should remember that in 90 per cent. of the cases metastases occur not in the body, but locally in the regional glands. By removing these and their surrounding fat and fascia, as well as the veins and muscles, if they are involved, the permanent results will be better.

Dr. George Crile, Cleveland, excises the vein and muscle only in cases in which metastases have already occurred in the lymphatic glands. When metastases can not be demonstrated, only the regional glands that are known to drain the field of the original focus are excised. He said that the functional value of the internal jugular vein and the sternomastoid muscle is not such that one need hesitate to remove them, provided it will add, even to a slight degree, to the certainty of complete excision of the disease. The provision for return circulation of the veins is many times greater than is needed. Dr. Crile in one case removed both the internal and the external jugular veins. Later metastasis occurred in the opposite side, and after the neck was opened he found that compensation had taken place in some subcutaneous veins near the median line, these having enlarged to the size of the internal jugular. He then removed both the internal and the external jugulars of the remaining side, and there was not the slightest circulatory disturbance at any time.

Give Drugs for Exact Purposes.—Shattuck, in the *Boston Med. and Surg. Jour.*, lays down general rules for the giving of drugs: to do no harm; to have a clear idea whether we give the drug—as a specific, a curative, a palliative or a placebo; to give the drug uncombined, if possible, though to this rule there are many exceptions. When using an efficient drug one should be sure that the preparation is efficient; and should continue its use until either the desired effect or toxic manifestations are produced. The *Medical Times* adds the comment that one should be sure the druggist is an accurate compounder and uses fresh material.

DISPENSING VERSUS PRESCRIBING.*

M. H. FUSSELL, M.D.
PHILADELPHIA.

Much is written in various medical journals, much is spoken by men, leaders in the medical profession, of the nostrum evil, of the impropriety of physicians using any preparation of drugs the full formula of which is not known.

Many writers, with great justice it seems to me, insist, as Billings has done in a recent article, that mixtures put out by manufacturing firms, especially when such compounds contain on their labels the various diseases for which it is a specific, are just as objectionable as various secret remedies in which we are not certain of the exact proportions of the various ingredients.

Sal vitæ has on its label a list of fourteen or fifteen ingredients said to be in the compound. It also states just exactly the therapeutic use of each supposed ingredient. It is a blotch on the escutcheon of a manufacturing pharmacist.

A certain preparation containing eight ingredients, the exact proportions of each being given, is said to be a formula used by a famous French specialist. It is prepared by a reputable firm; it is handsome in appearance and pleasant to the taste. It is an excellent example of the kind of mixture against which Billings speaks. The fact that it is said to have originated with an eminent physician is used by the smooth-tongued agent as a specious argument for its use. Doubtless if it does not cost too much it graces the shelves of hundreds of dispensing physicians.

The great advance made in the practice of medicine and surgery in the past century has come because of the heroic labors of men working in pathologic and bacteriologic laboratories, delving for the cause of disease and its remedies; because of men working in hospitals and at the bedsides of private patients studying the clinical aspect of diseases and how best they are prevented and controlled; because of men working in pharmaceutical laboratories searching for the best forms of drugs and their most useful and active ingredients. Of these three classes of men, the second division claims or should claim the great majority of practicing physicians.

The opportunity is given to each individual practicing medicine to add somthing, be it ever so little, to the sum total of medical knowledge, and thus to the good of mankind. It can be done, is daily done, by thousands of men and women by a careful physical examination of each patient, by recording of observations, by a careful selection of the proper treatment and the means of applying that treatment, and is made efficient by submitting these observations to the medical public.

This paper will have to do with one of the last statements: The means of supplying to patients the treatment necessary by drugs. What shall a young physician do? Shall he dispense from his own office or from his medicine case? Or shall he write a prescription to be filled by a pharmacist? What I shall have to say must relate only to a physician practicing in proximity to a reputable pharmacist. I can see no way at present for the country doctor to work except by dispensing. It appears to me that the choice of these two methods will depend entirely on the education and the character of the young physician.

If he has been instructed that the giving of drugs is a small, but important, item in the duties of an honest

* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

physician, if he has been carefully drilled in the principles of practice, which may be summed up as examine your patient, study the case, apply the proper treatment, if these things have been pounded into him while a student at college, if he has accepted the great office of a physician, recognizing the terrible responsibility which goes with it, realizing that human life and the happiness of a family may depend on his conduct of his cases, then it seems to me time will soon be such a great item to him that he must give it the study of his cases and not waste it by becoming a mere mechanical drug dispenser.

If, on the other hand, he has been improperly taught, if he has been led to search for a drug remedy for consumption, for cough, for palpitation of the heart, or for any other symptom or disease, if he has taken up medicine as a method of making a living merely, as a means of amassing a fortune, then I suspect he will soon fall into the habit of drug dispensing.

I take it that the majority of men have entered medicine without any adequate appreciation of its great responsibility, that many graduate with little idea except that they are to get patients to treat and thereby to make a livelihood. For these this paper is written.

What is before the young man of this character?

He desires to practice medicine honestly. He must, perforce, settle in a suburb of a large city or in a country town. He must make a living. He desires to make it quickly. He sees around him young men with large practices. He finds that many of them are dispensing their drugs. He is importuned by agents of drug concerns, who soon swarm on him, to buy each and every special mixture put up for diarrhea and for vomiting, as well as antibilious and antigrip remedies. The arguments that the manufacturing chemist has spent fortunes to make the drug or mixture active, that the formulæ are those used by a great physician, have their effect and he is soon in possession of a full line of drugs with which to begin practice. God save the mark!

It appears that inquiry into the following propositions will settle whether or not dispensing should be practiced:

First.—Is dispensing for the advantage of the patient?

Second.—Is dispensing to the pecuniary advantage of the physician who dispenses?

Third.—What effect does dispensing have on the manner in which the physician conducts his cases?

Fourth.—What effect has dispensing on legitimate pharmacy?

I fully realize that dispensing *per se* is not harmful. I recognize the fact that most men in active practice properly carry an emergency case from which to take drugs for immediate use. I can conceive of a method of dispensing which, if strictly adhered to, would be of great advantage to both physician and patient, but I do not believe that any such a method is practicable and at the same time conducive to the greatest good of patient and physician. I am firmly convinced that a study of the act of dispensing as it is practiced to-day will prove, beyond doubt, that all four of the foregoing propositions will be so answered that an instant vote will be given against it.

Inquiry among many men who practice this method has developed the following facts:

Almost every man interrogated said that he first began dispensing because some neighbor was doing it. In order to get patients he was forced to follow his neighbor's custom. Every man said that it pays because the office visit is paid for in cash and because patients are attracted, thinking that it is cheaper to go where they can get medicine and advice for one fee.

They were all agreed that better control is had over the patient, because he is ignorant of the medicine he is taking and can not have the drug renewed without consulting the physician. Most of them frankly admitted that they continue the practice because it pays and that they are fully aware that they do not study their cases well, but rather prescribe for the symptoms (a few maintained that they study their cases well).

All admitted that special formulæ are largely used, and some defended that practice because they believe that formulæ used by eminent physicians are better than they could suggest. One man said that he dispenses only when the patient could not pay for the medicine.

Let us now take up the four propositions just stated above:

First.—Is dispensing for the advantage of the patient? If it is, then surely it is proper and should be practiced by us all.

Let us inquire. For the sake of argument we will consider that the patient is examined properly and that a proper diagnosis is made. The drugs which are in the office of any man who dispenses must either be in the form of pellets, pills or ready-made mixtures or powders. Few men can possibly compound their own prescriptions, in the first place they are not skilled and, secondly, they can not give the time necessary. Ready-made pills, powders or mixtures are almost without exceptions set formulæ either put up at the suggestion of the physician himself or by the manufacturing pharmacist.

Every case treated by drugs should have the drugs or formula especially fitted for the individual case. No set formula can possibly fit for a great number of cases. Even though the formula should be proper, the infirmity of age overtakes almost all drugs kept in the stock of a dispensing physician and makes them prohibitive. I know of one who buys his quinin pills and Blaud pills by the thousand!

Is it cheaper for the patient?

The person treated believes that if he can get his medicine and advice for one fee (and that is the usual practice) he is getting much for his money. For a fact he is given as much medicine as will last him a week or a few days and must then return. By the testimony of physicians who know, the patient returns much more often than he would do if he were given a prescription, and, therefore, the cost is as great to him. As I have said in another place, a cheap doctor is usually a bad lot.

Frequently when a certain amount of a drug is desired but is not in stock another amount of the same drug or a similar drug is given in its place; substitution is constantly practiced. This is properly decried in pharmacists and should be shunned by physicians. It would then appear that dispensing does not favor the patient, but is a distinct disadvantage to him. It costs him as much; he may get a bad form of drug unsuited for his case.

Second.—Is dispensing for the pecuniary benefit of the physician? Yes and no. Unquestionably, in certain districts, a young man can get more patients more quickly and get more money at first than if he limits himself to prescribing in the same district. The difference in the rapidity with which two men, one of each class, acquire a practice proves this. There is a limit, however, both to the number of the patients thus attracted and to the ability of the doctor to attend to them. The fees

are usually small and the dispensing physician rarely attends the best class of patients. Consequently as he advances in years he finds himself with the same class of patients with which he began practice.

Assuredly a rapidly growing practice which pays is attractive to any man who needs money, but let him be not deceived. A rapidly growing practice does not by any means prove that the physician is a good one or that he will do good work. Again let him remember that assuredly, and I say this advisedly, one case well studied, though the fee be small, will lay a much surer foundation for future practice and honor than many cases not studied and attracted because the physician is cheap.

The only possible sure ground on which to build a practice which continues to grow with increasing pecuniary rewards with the years, and a reputation which is worth more than money, is to treat the cases for themselves, for the sake of the patient, and not for the money one can receive in his early years.

Third.—What effect does dispensing have on the manner in which a physician conducts his cases?

I approach this proposition with much misgiving. All of us are frail, few of us live up to our ideals. We all make mistakes whether we dispense or prescribe. I feel, however, that dispensing so magnifies the business part of medicine to the detriment of true, careful practice, that this fact alone is a weighty argument against the habit.

As before stated, the only proper method successfully to practice medicine is to take a history of every case, examine every patient with the greatest care and prescribe accordingly. I am fully aware that simply writing a prescription will not cause any physician to study his patients. I know that it is quite possible for a physician to study his patients and then dispense what he feels to be the proper remedy. Does he do it? And does he continue to do so? The majority of patients in our early years come to us for the relief of some troublesome symptom. They care little whether the physician studies their case or not, so they are relieved. Now, the drug dealt out by the physician himself which will promptly cure a symptom is such a great advertisement to the doctor, who is at once thought to have some peculiarly potent remedy not possessed by others, that it at the same time becomes a pecuniary advantage and a greater danger to him. The next patient who comes with the same symptom, though perhaps from an entirely different cause, will expect the same treatment. It is a brave doctor, indeed, who can tell or will tell his patient that the drug he prescribed for X will not do for him, though he has the same symptom. Likely the same or a similar drug will be prescribed.

The habit grows until in the vast majority of instances the doctor soon neglects the finer part of his work, he does not examine every patient, he rarely examines the urine, never the blood or sputum, and his very success in obtaining patients and money ruins him as a physician. And this, I believe, is because he dispenses. It is such a troublesome matter to make a proper diagnosis that the physician, by nature chosing that which is pleasant and easy, falls into the habit of really neglecting his patients.

The man who prescribes is not thought to possess a remedy peculiar to himself, he is not put under so great and frequent temptation as his dispensing brother, and he thus gradually comes to study the cases better. I do not for a moment mean to suggest that dispensing alone could cause ill results, but if the young physician is one of the class which are all too numerous, to which I have before alluded, it will be the straw which breaks him, and I verily believe that quick success to which dispensing can lead is such a terrible pitfall that it may ruin him.

Prescribing should encourage skilled men to study and to practice pharmacy. It is quite true that many pharmacists to-day are not skilled, they will prescribe across the counter, they fill their drug shelves with nostrums, they substitute.

All this is bad, and no physician should allow his prescriptions to be filled by such a man. There are usually on hand one or more pharmacies where one can get what he orders put up as he directs, and where the druggist does not prescribe. Such men should be encouraged.

There is no temptation for the physician to substitute if he prescribes. He can write for what drug he pleases in what proportion and in what form it suits him.

Prescribing gives much less prominence to the business side of medicine, the mere getting of money. It is not selling drugs.

It is ordering a formula compounded for a condition which should be studied. I believe that one becomes much less routine under those circumstances. If it helps to make the use of ready-made formulæ less common, then surely it should be done by all.

To summarize:

Dispensing often gives to the patient drugs unfitted for his case, at greater cost to himself than if he obtained them on prescription.

It helps to make it easy for the doctor to become routine and to neglect the proper study of his cases.

It ruins the druggists in the neighborhood and leads them to become nostrum venders.

DISCUSSION.

DR. HENRY D. JUMP, Philadelphia, said that three points in the consideration of this subject must be counted in making a decision: The interest of the patient, the interest of the physician and the character of the medicines used. He agreed with Dr. Fussell that dispensing is bad for the patient, who will not recover so rapidly from the use of ready-made pills and mixtures as he would from prescriptions freshly prepared for his particular ailment. It is to the physician's advantage to dispense, because he has control of the prescription, because the patient must return to him and pay a fee for a new supply of medicine, and because he will certainly at the beginning gain many new patients on account of cheapness. Ultimately, however, the physician must suffer because his patients do not recover promptly and because his practice will be largely limited to the poorer class. Finally, Dr. Jump said, tablets and pills made up as they are, in large quantities, are not reliable in constituents, solubility or dosage. He has known persons salivated by calomel tablets in which the supposed dose was too small to produce such results, and he has seen ready-made pills excreted in the feces in practically the same form that they were given.

DR. H. R. SLACK, LaGrange, Ga., declared that the present tendency toward dispensing as against prescribing is due to the careless way in which most of our schools and hospitals teach prescribing, and the trend toward therapeutic nihilism, which prevails throughout the country generally. In 1895 he spent some time in medica. centers—Baltimore, Philadelphia, New York—but in one of the newest, best equipped medical schools and best equipped hospitals he found the most careless prescribing. The young men who were house physicians spent hours making physical examinations and then would write "KI mixture," "C. P. mixture," etc. Dr. Slack would ask the ingredients, and they would reply, "I don't know." They could not tell. Dr. Slack went to Dr. Osler and lodged complaint, and told him that he did not think that it was doing justice to the postgraduate men who had to practice

medicine with a view to curing their patients, that they came to the hospitals and colleges expecting to learn just what was in the medicines prescribed. He found the same true in Philadelphia and New York. He said that he thinks the nostrum evil is largely due to this carelessness in teaching and prescribing in the hospitals and schools of the country, and the young man who has not been taught how to write a prescription feels hesitancy in writing one. They are taught that such and such tablets or preparations have been tried and the result is that they keep the tablets and ready-prepared nostrums to give the patients when they come.

DR. W. D. CALVIN, Fort Wayne, Ind., said that the arguments used in this paper have a tendency to make those physicians who dispense appear in a bad light. While he admits the absurdity of giving any one patient such a collection as in the case exhibited, he has likewise found many a house where physicians in writing their prescriptions have filled the closets with unused or half-used medicaments. The physicians who prescribe such quantities of medicines are not fair examples of their class—of those who write prescriptions—any more than the doctor referred to by Dr. Fussell is an example of the very large number of physicians who dispense. Dr. Calvin agreed with Dr. Fussell that physicians should study their cases. Physicians can not review any of the fundamental branches in the medical course too frequently, and in this review they should make a study of materia medica and therapeutics. The best colleges have well-founded laboratories of materia medica which are just as important as any other laboratories. The student can learn the nature and uses of drugs only by seeing, tasting, handling these drugs, and becoming thoroughly conversant with them. After the student goes into the world to practice, if he has simply to depend on his pen and paper, so far as his acquaintanceship with drugs is concerned, he is losing a great deal. Dr. Calvin has made it a practice to change to another firm if he can find a better drug, and that is the point that one can not overcome when one is writing prescriptions. The young physician who dispenses will, therefore, derive more benefit from materia medica than the one who writes his prescriptions. In Indiana, Dr. Calvin said, the practice of dispensing is growing, and growing very rapidly. The physician who dispenses and dispenses properly will see that his drugs are not old. Frequently one will find on the musty shelves of the drug store drugs that were they pure whisky would be mellow with age. Another reason why it is advisable to dispense is that it overcomes the tendency and the pronounced habit of pharmacists all over this country of refilling prescriptions and substituting. The argument made against the physician who dispenses is that he is liable to substitute. He is not nearly so liable to do this as the druggist. At one time Dr. Calvin prescribed entirely and so can consider the question from the two standpoints. As to the quality of physicians who dispense, in our county, state and national societies we do not find the men who are dispensing inferior to those who are writing prescriptions, nor do we find their results inferior. Another reason for dispensing is that it leads to the use of fewer drugs, and Dr. Cabot's article, read before the Section on Practice of Medicine, in regard to the use of drugs is most appropriate. Dr. Calvin declared that when he says that 95 per cent. of his work to-day is done with less than 15 drugs he does not doubt that every physician present will say that 95 per cent. of his work may be done with 10. We have come to the time when prescriptions of 10 or 15 ingredients are no longer used. Whenever we can use a single drug it is our duty to do it. If we want to use one of the alkaloids of opium, he asked, should we give opium containing 17 alkaloids, resins and so on? Dr. Calvin said that he could cite many other reasons for dispensing in preference to prescription writing did not time forbid.

DR. C. A. E. CODMAN, Philadelphia, believes that dispensing tends to make the physician careless and works to the detriment of the patient. The physician is led to believe he can see more patients in a shorter period of time, and then he gets in the habit of not stripping his patients. At present the students are taught that they should not treat anyone unless stripped to the waist nor until a careful physical examination has been made. Second, the physician is led to believe that he can treat the patient entirely by symptoms, not by a thorough diagnosis; this also works to the harm of the patients. Many young men who start out are harassed financially, and they are led to believe that they can support themselves by dispensing. In large cities, where the hospital evil exists, these places take the very patients that the young man should have to provide him with bread and butter. The young man who has gone through a long college course must support himself. If that physician will try to stick it out he will win in the end by prescribing. Dispensing will give him a class of patients which will always cling to him. He will not go upward and forward and get the families that should help him. Prescribing leads a man to use mixtures containing eight and ten drugs. If he studies his case he comes down to simplicity and his pharmacopeia will range from six to ten drugs and not to mixtures which contain from eight to ten.

DR. MARY E. DUNNING, Newburgh, N. Y., does not believe in physicians dispensing to any great extent, but stated that they should never prescribe the habit-producing drugs. As physicians, she said, we should never write a prescription from which by indiscriminate refilling the patient can acquire a habit.

DR. EDWARD A. TRACY, South Boston, agreed with Dr. Fussell that physicians should not prescribe or dispense those old-fashioned prescriptions which have 10 or 15 ingredients in the mixture. Dr. Tracy has done prescription writing for 11 years. He found the evil of substitution was such that he did not get results in the treatment of his patients, and he was driven to get medicines himself so as to know that they were what he wished his patients to have. For the last four years he has dispensed medicines, mostly the active principles. He gets the drugs and studies them before he uses them on his patients, and finds that he can get the results which materia medica taught him he should expect from these drugs. A physician, he said, can treat patients by dispensing in a far more scientific manner than by the prescription method, because seeing the patient every day, he can give the drugs which the symptoms call for. While dispensing and prescribing have nothing to do with examining the patient, Dr. Tracy believes that every physician who gets results must thoroughly examine his patient. He agreed with Dr. Dunning that habit-producing drugs should never be prescribed, but, when necessary, dispensed. Dr. Tracy said that his remarks against substitution may seem too sweeping, it may be that it is a local affair, but he fears that commercialism has taken hold widely of the pharmacists of the country. For that reason he prefers to dispense his own drugs so that he knows what the patient gets.

DR. F. R. DAME, Medford, Mass., said that it has been claimed that a physician is apt to buy his tablets in large quantities, with the result that they become old. That is a thing that the physician has entirely under his own control, and we can not be sure that it does not happen in the druggist's stock. If it happens in the physician's supplies it is his own fault. The habit of using made-up formulas for certain conditions should be abandoned, but tablets made up as an individual drug are certainly an advantage in dispensing. It has been suggested that a physician is apt to buy where he can buy cheapest, getting an inferior class of goods. It does not seem to Dr. Dame that that is a good argument, since a physician who respects his business will see to it that his goods are the best. As to dispensing a dozen different kinds of tablets, Dr. Dame knows a physician who gives four and five prescriptions in an individual case, each of which contains three and four different preparations, so that it can not be argued that dispensing would tend to make complex prescribing. There is a happy medium in this question. It may be to the physician's advantage, also to the patient's advantage, that the physician dispenses certain things, whereas, no doubt it is a disadvantage to dispense entirely, as we may be tempted to substitute something for a drug we may happen to be out of.

DR. M. I. WILBERT, Philadelphia, said that the commercializing of the physician, as a result of his dispensing his own drugs, is a feature that has been overlooked by many who dispense. He knows from experience with physicians who are

dispensing drugs that every one of them has gradually gotten into the same habit of looking for cheap preparations. A man ordering 500 Blaud's pills will send out requisitions and get prices on this quantity, and nine times out of ten he takes the cheapest. He does not buy the best that can be had because the best will cost from 20 to 100 per cent. more than he would have to pay for the same pills from irresponsible manufacturers.

DR. N. B. BAYLEY, Haverstraw, N. Y., said that he thinks the physician is as apt to buy cheap drugs as the pharmacist who dispenses the physician's prescriptions. He does not believe that the physician will buy the cheapest, that is, the poorest drugs. He will learn the reliable firms from whom to purchase, as well as the pharmacist. Dr. Bayley has seen the physician who writes prescriptions order equally as many drugs for the individual patient as he who dispenses from his office; it is the physician and not the manner of prescribing that dictates the result. That unwise patients will give their prescriptions to their friends to have filled and used, may be some financial discredit to the physician, but on the whole that is not a large evil. As to whether a physician shall dispense or prescribe, the environment and exigencies of his practice will be the best guide. He can do either or both without criticism. The worst evil in prescribing drugs is to order mixtures and compounds of which the physician has little or no knowledge of the contents—and this irrespective of the fact whether he dispenses or writes prescriptions.

DR. C. S. N. HALLBERG, Chicago, said that he sometimes hears of irregular, quackish practices pursued by members of the regular profession. In regard to the statement, "We know the druggist buys the cheapest drugs," Dr. Hallberg asked how the physician making the statement knows that, and if he is familiar with the tests of the Pharmacopeia. Physicians know nothing about that. It is the prerogative of the pharmacist to identify and to pass on the purity, quality and strength of medicines. The physician is neither by training, experience nor environment fitted to it. Why, he asked, bring in these irregular practices of substitution and of prescriptions being refilled without the physician's order? What else can one expect when in Boston the "largest retail drug establishment in America" prides itself on the fact that for nearly one hundred years it has never kept a prescription on its file, but hands it back to the patient. Physicians are to blame. What physician in Boston has any right to send a prescription to such an establishment which does not understand the first principles of pharmacy or medicine? The pharmacist is the only one who is competent to compound, prepare and, except in case of emergency, to dispense medicine. The fact that many violate this and counter prescribe has nothing to do with it. Who are the directors of the "World's Dispensary?" Who is the proprietor of the "Salveda" remedies? They are the doctors. There are physicians who are just as bad or worse than the pharmacists. It would be no more proper to accuse the pharmaceutical profession of irregular practices because they do occasionally counter prescribe, or because they do occasionally substitute than it would be to accuse the medical profession because there are advertising quacks and all kinds of fellows in their ranks. This question is "up to" the doctors. Physicians should demand that a prescription shall not go out of the hands of the pharmacist, and should give instructions to the pharmacist that the prescription is not to be repeated except on special order. The patient has no right whatever to the prescription. Dr. Hallberg admits that there are a few things which the physician may properly dispense. If physicians years ago had written for "Liquor ferri mangrani peptonatus," people would not be haunting bargain stores asking for "pepto-mangan," and they would not be able to get it. There is a reasonable medium in this. There is no use in the pot calling the kettle black. Let us try and get together. Wherever a physician is located let him find a competent, honest, skilful pharmacist. The members of the American Pharmaceutical Association are found in almost every state. They are not sublime, but there is something that holds them together, and wherever one finds a member of the American Pharmaceutical Association, one can say, "My friend, I don't want that prescription to be repeated," and it will not be repeated.

DR. M. H. FUSSELL, Philadelphia, declared that the vast majority dispense pellets, pills and compressed tablets. Many of these compressed tablets and pills are compound concoctions and there is no more reason to say that because a foolish physician will prescribe many things in one prescription that it justifies dispensing tablets containing numerous ingredients. Dr. Fussell said that men in his neighborhood, many of them reputable gentlemen, most of them graduates from the University of Pennsylvania or from the Jefferson Medical College, when they started to practice medicine, started to practice decent medicine and very soon fell away because, as a candid physician told Dr. Fussell just before he started for the session, "I tried for six months to do as you asked me to do, and regularly every six months I went to my people for the money for my rent. I put drugs in my office and I haven't had to go once."

A METHOD OF RECORDING CHANGES IN BODY WEIGHT WHICH OCCUR WITHIN SHORT INTERVALS OF TIME.*

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Exact determinations of the rate at which metabolism is occurring within the body are of great practical as well as scientific interest. It is doubtful whether any method can be devised which will give more accurate results than those obtained from a subject living in a respiratory chamber, but this method in its most complete form requires an expensive plant, can not be used in the case of the sick and fails to give changes which occur within short intervals of time. In the hope of developing a method which, even though less exact, might be sufficiently accurate to meet practical requirements, and give information concerning changes in metabolism which occur from minute to minute, the work recorded in this paper was undertaken.

Higley, working with Bowen in the physiological laboratory of the University of Michigan, found that the movements of a delicate balance could be recorded on the blackened drum of a kymograph, without impairing the sensitiveness of the balance to any considerable extent. It was therefore thought that if a balance could be constructed capable of weighing from 70 to 80 kilos, with nicety, and if the scale pans had the form of a mattress, a man might lie at ease on one of the pans, and the rate of loss of weight per minute or any longer interval of time could be readily recorded ,and the amount of weight at any given moment be determined.

DESCRIPTION OF BALANCE.

Such a balance was constructed in the shops of the university, but it was found to be too sensitive to be used alone, for a man may lose more than a gram a minute, which is more than sufficient to turn the balance through the desirable working distance. It was therefore found to be necessary to control the movement of the balance by means of a spiral spring attached to one of its arms, i. e., to weigh by means of a combination long-arm and spring balance.

As used at present, the balance supports the weight and the spring does the weighing. The spring is fast-

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

* From the Physiological Laboratory of the University of Michigan.

ened from above to the arm of the balance which supports the man; this side is over-weighted by 3 or 4 gm. and as the man loses weight, the spring contracts, drawing the arm of the balance upward. The spring is so arranged, that it can be attached to any desired part of the arm of the balance and so given any suitable leverage. The movement of the balance is recorded on a kymograph drum by means of a long lever, which magnifies the movement about ten times, and which is connected by means of a steel rod with the arm of the balance carrying the man. To avoid friction, the connecting joints are knife-edges, resting in grooves. The writing lever can be regarded as a delicate balance, a writing point suspended from one end to the lever, and a counterbalancing weight at the other end, having the places of the usual scale pans. The writing pointer is a light stiff strip of bamboo, 14 cm. long and 4 mm. wide, tipped with a paper writing point. The writing pointer is fastened a little to the inside of the center of the axis from which it is suspended, and so tends to swing slightly out of the vertical plane. This tendency is sufficient to keep the point always resting lightly against the drum.

With this apparatus it has been possible to obtain graphic records of the total loss of weight of a man or a dog, for example, during 2 minute intervals, at a number of periods within a few minutes of each other. The loss during longer intervals could be readily obtained by increasing the leverage of the spring, or using a stronger spring.

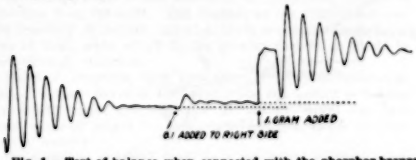

Fig. 1.—Test of balance when connected with the phosphor-bronze spring and loaded with 80 kilos on a side. The curve shows that it oscillates freely, and that 0.1 gram caused an evident deflection.

The balance itself is made of stiff steel tubing, welded into strong central and lateral brass castings, and has the form of the walking beam of an engine. The central knife-edge is about six inches long, and is made from a triangular bar of very hard cold drawn steel. It is supported at the ends in groves cut in two plates of well hardened steel. These plates rest on a horizontal steel bar, which is fastened at each end to a strong iron casting. These castings are secured by heavy lag screws to two 6x6 wooden joints which extend from the floor to the ceiling, where they are securely fastened. The plates containing the grooves for the knife-edge are not fixed on the supporting iron bar, but are free to make a certain amount of movement. Two bolts pass through holes in the iron bar and screw into the bottoms of the plates, but as the holes in the bar are a little large for the bolts, the plates can rotate and shift their position slightly in the horizontal plane. Moreover the bottoms of the plates are slightly convex in the direction of the groove and hence can rock a little on the supporting bar. The fact that the plates are free to move slightly in all but the vertical direction, enables the knife-edge to adjust the grooves to itself when it is placed in them. This arrangement reduces the friction between the central knife-edge and the grooves to a minimum, and gives the balance its great sensitiveness.

When at rest and weighted with 80 kilos on a side, the balance will turn to .02 gm. When in motion, it has a period of swing of 70 seconds for a double oscillation, and is still more sensitive to changes in weight. One decigram will cause the record on the drum to deviate 10 mm. As one can read two-tenths of a millimeter readily, a change in position of the balance corresponding to .002 gm. can be observed.

As has been said, the sensitiveness of the balance is so great that it is necessary to control its movements by connecting a spiral spring to one of the arms. The spring in use has an initial tension of 5.3 gm. and the balance thus harnessed, has a period of swing of about 50 seconds for a double oscillation, and one decigram deflects the lever about 2.7 mm. The errors due to calibration and reading the curves are probably now not more than 3 or 4 per cent., and with further refinement of the method, which is still in its infancy, will probably not to be more than 2 per cent. Figure 2 shows the curve of the loss of weights of alcohol, from an alcohol lamp burning on one of the scale pans of the balance.

EXPERIMENTS.

Not very many experiments have thus far been made, as the apparatus is undergoing modifications as to its finer details. The tables will serve to give an idea of

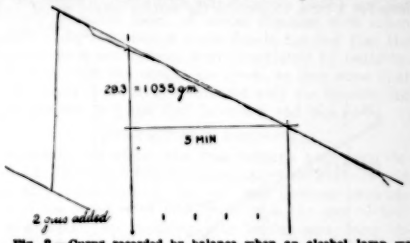

Fig. 2.—Curve recorded by balance when an alcohol lamp was burning on the right pan, the balance being loaded at the time with 80 kilograms on each side. When 2 grams was added to the side on which the lamp was, and the pan went down, the recording lever rose; as the lamp burned, the lever fell.

the character of the results which have been obtained and the possible uses of the instrument.

An experiment made on two men and one dog at about the same part of the same day, March 17, 1906, the room temperature being 18 C., gave the results in Table 1.

TABLE 1.

Subject.	Age.	Weight.	Total loss a minute.	Average loss.	Widest variation.
W. P. L.	50	71	.640		
			.735		
			.637		
			.689	.675	.098
F. M. A.	29	72	.670		
			.663		
			.698	.677	.035
Dog, Pat, asleep	3	18½	.147		

The loss per kilo was for W. P. L., .0095 gm.; for F. M. A., .0088 gm.; for Pat, .0079 gm.

Table 2 gives the results of experiments made on a man on three different days.

Apropos of the accuracy of the records of the balance, it is to be noticed that this man weighed 72 kilos, a little over 72,000 milligrams, and that the five determinations of the loss of weight on May 19 ranged from 505 to 529 milligrams, a difference of about 24 milligrams.

An illustration of the rapidity with which the balance responds to changes in the loss of weight is to be found

TABLE 2.

F. M. A., aged 29, weight 72 kilos.

Date.	Temperature.	Total loss of weight a minute.		Skin loss.	Lung loss.
May 17	27½C	1.327			
		1.260	A		
		1.165			
		1.228	(foot hurts)		
		1.210		.456	
		1.010	B		
		1.042			
		1.123		.439	
		Average 1.171		.447	.724
May 19	22C	.526			
		.529	A		
		.519			
		.508	B		
		.512		.361	.351
		Average .518			
May 24	24 ½C	.828		.286	
		.907	A	.371	
		.781			
		.673		.371	
		.637	(asleep)		
		.778	(awake)		
		.677	B	.209	
		.457			
		.617		.327	
		Average .708		.327	.379

in the curves obtained in experiments in which the breath was held. Often, in five or ten seconds after the man stopped breathing the slope of the curve changed, flattening as the loss from the lungs stopped; when the breathing was begun again, the respirations were very deep for a time, to remove the carbon dioxid which had been held back, and the curve fell more rapidly than before the holding of the breath; soon the curve flattened again, showing the rate of loss of weight to be decreasing. For a time, the rate of loss was less than before the breath had been held, because the improved ventilation of the lung following the holding of the breath lessened the output from the lung for a time. Finally the curve resumed its original slope.

Another illustration of the sensitiveness of the balance to small changes in the rate of loss of weight is to be found in the difference in the rate of loss of weight during sleeping and waking (see Fig. 3). During the experiment on F. M. A., May 24, the subject appeared asleep. The eyes were closed and the lids twitched. He was spoken to quietly and told to open his eyes. He was not startled and made no movement except to slightly change rhythm of respiration at the moment he was spoken to. The curve of loss of weight was seen to change its course as the eyes opened, beginning to fall more rapidly, showing probably an increased metabolism. The fact that the metabolism lessens as one passes from a state of activity to one of rest, is shown generally in the experiments. The loss of weight is always greater in the observations made soon after the subject takes his place on the balance than in those made after he has been lying there some time.

Still another illustration of the capacity of the balance to reveal slight changes in metabolism was observed in the record of May 17. The results of four successive observations were: 1.327, 1.260, 1.165, 1.228. The rate of loss of weight was lessening as the subject quieted down, until the last observation, when it was higher. This last observation came at the end of the drum, when the subject asked if he could change his position as his foot was becoming uncomfortable.

When the breath is held, the loss of weight depends on the rate of excretion from the skin alone. This, of course, should vary with the temperature and the amount of moisture in the air. The effect of external temperature on the rate of loss of weight from the skin was shown in the above experiments on F. M. A.

Temperature 22 C., May 19, loss per minute, 0.161.
Temperature 24 C, May 24, loss per minute, .356, .371, .371, .209, .327.
Temperature, 27 C, May 17, loss per minute, .0456, .439.

None of the figures which have been given is of any especial value, except as suggestions of character of the results which may be expected from the method.

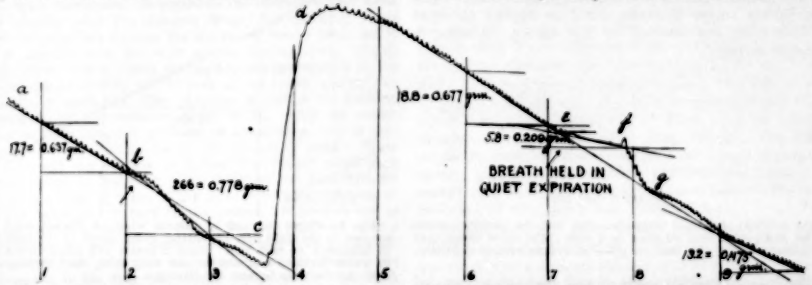

Fig. 3.—Curve of loss of weight of F. M. A. (aged 29, weight 72 kilos.), 5:30 p. m., May 24, 1906. Room temperature, 24.5 C.; hygrometer, 55 degrees. The small oscillations were caused by the respirations. Time is marked in minutes at the bottom of the curve. a-b, subject asleep; b-c, waking curve; at c, 4 grams added; d-e, waking curve; at e, breath held in quiet expiration; at f, a large inspiration when subject begins to breathe; f-g, curve shows rapid loss of weight following the holding of the breath. At b, he was partly asleep, eyes closed, lids twitching. He was told to open his eyes and did so. He was not startled and was not seen to make any other movement.

Higley found that two tubes, one bringing air and the other taking it away, can be connected with a balance without appreciably altering its sensitiveness. It is possible, therefore, for a man, while lying on a pan of the balance, to receive outside air through one tube and to give off air that he has breathed by another tube, at the same time he is being weighed.

The loss of weight from the lungs is the algebraic sum of the carbondioxid lost plus the water lost, minus the oxygen absorbed. If the subject should breath through a train of tubes, the first containing sulphuric acid to take up the water of the breath, and a second containing soda lime, to absorb the carbon dioxid given off, the amount of the loss of water and carbon dioxid from the lungs could be determined by weighing the tubes before and after the experiment. Further, if this train of tubes was on the same side of the balance as the subject, so that what he gave off from the lungs was held beside him on the balance, any recorded change in weight would be due to the loss of water from the skin and gain of oxygen by the lungs. If the loss by the skin was known,

the gain of oxygen could be calculated. A correction would have to be made for the water and carbon dioxid in the air breathed, or these would have to be removed before the air reached the subject.

Theoretically, it is possible by the gravimetric method to ascertain the total loss of weight by the body per minute, and to differentiate between the loss of weight from the lungs and skin, and this has been done in a number of cases. In addition to this, the loss of water and of carbon dioxid from the lungs, the gain of oxygen by the lungs, and, therefore, the respiratory quotient probably can be obtained. This has not been done, the development of this part of the method being as yet incomplete. How accurately the respiratory quotient can be ascertained by this method, and what difficulties may arise in the practical application of the method remain to be determined.

DISCUSSION.

Dr. D. V. N. Dearborn, Boston, enquired whether Dr. Lombard had made any studies of mental activity, as that would seem to be a proper method of getting at the mathematical status of that problem.

Dr. Lombard said he had made no studies along that line that he cared to speak of then. When the patient wakes up there is a reaction. He had evidence of that. He did not think the loss of brain activity would show itself, but if there is brain activity there is change in the muscle tone which might show.

Dr. Graham Lusk, New York City, said that the same amount of oxygen would be given off by the same man. The differences which were noted were probably due to cases in which temperature varies according to differences in loss of moisture from the body. This depends on the temperature and the humidity of the air. At 27 C. there is comparatively small loss of heat, while at 22 C. the greater part of it would be lost through radiation.

Dr. S. J. Meltzer, New York City, asked if the accumulation of carbon dioxid in the blood while the patient is holding his breath might not stimulate the sweat nerves and thus cause a loss of weight due to a greater production and evaporation of sweat?

Dr. Lombard expected that the curve would go down more rapidly when the man was holding his breath, because he was then performing a muscular act. He found the other thing, however. Occasionally he found that if he holds his breath for a considerable length of time, instead of it going down slowly it will go down rapidly. If he holds only as long as he can conveniently do so, and then begins to breathe, he very rapidly regains his normal breath.

THE OPSONIC INDEX IN MEDICINE.

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(*Continued from page 1725.*)

SPECIFICITY OF OPSONINS.

The results obtained by Wright and Douglas and by Bulloch[26] indicate the specificity of the opsonins, but to us the question seems as yet unsettled. Wright and Douglas[6] assume that a high degree of specificity exists, though their experiments, in which there was a decrease in the staphylococcic-opsonic index of serum to which typhoid bacilli had been added, would suggest that different bacterial opsonins possessed part of their power in common. Bulloch[26] bases his conclusions on the following experiments: Serum after being digested at 37 C. with staphylococci was freed from the bacteria by centrifugalization, when it was found that the supernatant, clear serum had lost all opsonic power for staphylococci, but "largely retained" the opsonins for tubercle bacilli; and, conversely, serum digested at 37 C. with tubercle bacilli and cleared by centrifugalization lost its tuberculo-opsonic power, but retained that for staphylococci. Simon, using his dilution method for estimating phagocytosis, has repeated these experiments a number of times, and in every case the opsonic power for staphylococci and for colon bacilli declined in about the same ratio.

Our experiments also give opposite results from those of Bulloch. Normal pooled serum from four healthy men was used in our test. This was divided into three parts and placed in tubes. In one tube staphylococci were thoroughly mixed with the serum, in another colon bacilli were mixed with the serum, and the third tube was used unaltered as a control. These were placed in the incubator at 37.5 C. for forty-five minutes, and at the end of that time were subjected to centrifugalization at high speed for thirty to forty minutes. The serum digested with staphylococci showed an opsonic index (the control tube being taken as 1.0) against staphylococci of 0.55, against colon, 0.12. The serum digested with colon bacilli gave an index against staphylococci of 0.26, but against colon of 1.4.

The high figures for the staphylococcic-opsonic index of the serum digested with staphylococci (0.55) and for the colon-opsonic index of serum digested with colon bacilli (1.4) are without doubt due to the fact that the bacteria were not thrown down completely by centrifugalization; but the results are given, as they show that staphylococci take from serum not only the opsonin for staphylococci, but also that for colon, and *vice versa*.

NON-BACTERIAL OPSONINS.

Opsonins for other cells than bacteria have been described. Hektoen[18] found opsonins for blastomycetes and probably trypanosomes. Barrat[27] and Hektoen have observed the presence of hem-opsonins in the sera of normal animals. We, working with human sera, have observed it twice in the serum of colored people with tuberculous lesions.

It is now well known that there are different kinds of bacterial antitropins, e. g., antitoxins, agglutinins, precipitins, lysins, and opsonins. Antitoxins neutralize the poisonous effects of certain bacterial toxins, the best known being those of diphtheria, tetanus, and botulismus. When, however, we investigate the blood fluids of animals inoculated with vaccines and bacterial products other than those mentioned, it is found impossible to demonstrate the existence of antitoxins, or, at any rate, the quantity of antitoxin is so slight that it eludes demonstration. On studying the experimental typhoid and cholera infections, Pfeiffer showed that the protective properties of the immune sera in these diseases are due to the presence of lysins. Experiments made in succeeding years have shown, however, that this doctrine of lysis is not of universal application. The study of immunity against microbes, like pneumococcus, staphylococcus, streptococcus, gonococcus and tubercle bacillus, has led to the greatest diversity of opinion; some claiming antitoxic properties, others lytic, and others phagocytic properties for the different sera.

INFLUENCE OF VARIOUS INFECTIONS ON OPSONINS.

In view of these facts, it is of interest to determine what infections influence the opsonin formation in the body as well as the effect of vaccines and antitoxins on opsonins.

26. Lancet, Dec. 2, 1905, p. 1603.

27. Proc. Royal Soc., 1905, vol. lxxv, p. 524.

The tuberculo-opsonic index in healthy individuals has been estimated by Bulloch[28] in a series of thirty-four medical students and thirty-two nurses. The average for the sixty-six cases was 0.95 with a maximum of 1.20 and a minimum of 0.80.

In twenty individuals Urwick[29] obtained an average of 1.006. We have made eighty-one observations on 19 supposedly normal persons and have obtained an average opsonic index of 0.988 with a maximum of 1.25 and a minimum of 0.73.[30]

Urwick[29] also proved that the tuberculo-opsonic index in healthy people does not vary except within narrow limits from day to day.

Our series of nineteen normals estimated during the past three months shows the following variations in four persons: 0.84 to 1.18; 0.81 to 1.10; 0.88 to 1.10, and 0.92 to 1.06. Wright and Douglas's normals varied between 0.85 and 1.2.

The tuberculo-opsonic index in different varieties of tuberculosis has been studied by a number of observers. Bulloch[28] examined one hundred and fifty cases of lupus from the mildest type to the most chronic and intractable and obtained an average index of 0.75, the figures being as follows:

Opsonic Index. Between.	No. of Cases.	Percentage.
0.2 and 0.3	3	2
0.3 and 0.4	3	2
0.4 and 0.5	21	14
0.5 and 0.6	29	19.6
0.6 and 0.7	33	22
0.7 and 0.8	22	14.8
0.8 and 0.9	18	12
0.9 and 1.0	7	4.6
1.0 and 1.4	14	9.3

Urwick examined 54 cases of tuberculosis, including a number of cases of phthisis in various stages. In many of them, especially of phthisis, the index was above normal, with variations from 0.3 to 2.6. In 33 cases of phthisis, 25 showed an index above 1.0, seven below 1.0, and one was at 1.0.

Wright and Douglas[31] examined 16 cases of tuberculosis, including tuberculosis of skin and subcutaneous tissues, tuberculous laryngitis, cystitis, peritonitis, prostatitis, and tuberculous glands. The indices ranged from 0.4 to 0.9.

We have made observations on 39 cases of tuberculosis as follows: Tuberculosis of bones including spine, hip, knee, ankle, tarsus and tibia, in all 22; above 1.0 in five cases, below 1.0 in fourteen, and normal in three. Fourteen cases of pulmonary phthisis varying from 0.41 to 1.37; above 1.0 in one case, below in eleven, and normal in two; and isolated cases of lupus and tuberculous glands ranging from 0.96 to 1.51.

We have estimated the tuberculo-opsonic index in a series of patients with various infectious diseases. Table 1 shows our results.[32]

In 36 cases of tuberculosis, the tuberculo-opsonic index is below normal (0.75) in 25 per cent. of the cases, and above normal (1.2) in 8 per cent. of the cases; in other words, is abnormal in 33 per cent. of the cases. Of the cases which had high indices, 33 per cent were cases with a systemic reaction, and of those cases which had low indices, 66 per cent. had strictly local lesions.

Of 23 cases with infections other than with the tubercle bacillus, the tuberculo-opsonic index was below normal in 26 per cent., and above normal in 4 per cent. of the cases.

EFFECT OF OTHER DISEASES ON OPSONINS.

The effect which certain chemicals, of which lactic acid is an example, have on the opsonic action of serum has already been noted, and suggests the possibility that non-specific anti-opsonins may be important factors in the establishment and spread of various infections. It is possible that substances with anti-opsonic action arise in consequence of local metabolic disturbances. Hektoen suggests that perhaps it is in this direction that we should seek a better understanding of the so-called vital resistance variations which we believe permit the development of primary and secondary infections in which phagocytosis is an essential means of defense.

It was with an idea of throwing some light on this

TABLE 1.—TUBERCULO-OPSONIC INDEX IN VARIOUS INFECTIOUS DISEASES. EMULSION OF BACILLI GENERALLY IN 1.6 PER CENT. NaCl.

Diagnosis.	Index.	Diagnosis.	Index.
Tb. hip and spine	1.14	Pulmonary tb	1.00
Tb. spine	0.75	Tb. tarsus	0.88
Tb. spine	0.92	Tb. glands, jaundice	0.96
Tb. spine	1.01	Inthrathoracic growth tb. glands	1.51
Tb. spine and empyema	0.80, 0.80	Sycosis and debility, F. H. of tb.	0.88
Tb. empyema and peritoneum	1.02, 1.02	Ac. tb. pneumonia	0.84
Tb. knee	0.78	Ac. tb. pneumonia	0.86
Tb. hip	0.46	Pneumonia	1.10
Tb. hip, with temp.	1.00	Pneumonia	0.92
Tb. hip, with temp.	1.17	Pneumonia	1.01
Tb. hip, with temp.	1.13	Pneumonia	1.20, 0.89
Tb. hip, with temp.	0.80	Postpneumonia empyema	0.84
Tb. hip	1.59	Postpneumonia empyema	0.86
Tb. hip, apyrexia	0.75	Postpneumonia empyema	0.78
Tb. hip	0.90	Typhoid	1.01
Tb. hip	0.85	Typhoid	0.68
Tb. ankle	0.59	Typhoid	0.68
Tb. ankle	0.75, etc.	Gono. arthritis	1.15, 1.09
Tb. ankle	0.90, etc.	Gono. arthritis, 0.67, 0.76, 0.79	
Tb. ankle	1.05, 1.15	Gono. arthritis	0.94
Lupus	0.72, etc.	Osteomyelitis of tibia	0.51
Tb. pleurisy	0.89	Osteomyelitis, non-tb.	0.91
Pulmonary tb.	1.00, 1.05	Pus kidney	0.78, 0.61
Pulmonary tb.	0.56	Paral. agitans, cyst	1.38, 1.52
Pulmonary tb.	0.93	Malig. endocarditis	1.06
Pulmonary tb.	0.56, 0.25	Abscess of liver	1.10
Pulmonary tb.	0.41	Acne	1.10
Pulmonary tb.	0.87	Acne	0.89
Pulmonary tb.	0.91	Acne	1.07
Pulmonary tb.	0.88	Acne	0.85
Pulmonary tb.	0.89	Appendicitis	1.04
Pulmonary tb.	1.37		

TABLE 2.—OPSONIC INDEX IN NON-INFECTIOUS DISEASES.

Diagnosis	Index to tuber.	Index to Staph.	Index to pneumoc.	Index to colon
Secondary anemia	0.95	1.09	...	...
Cirrhosis (Folin's diet)	1.13	0.45*	...	...
Hodgkin's disease	0.85	1.00	...	...
Thoracic tumor	1.16	0.90	...	...
Icterus catarrhalis	0.98	...	...	1.02
Acute lymphatic leukemia	1.33	...	...	...
Purpura; multiple sclerosis	0.75	...	...	...
Cardio-nephritis	0.96	...	...	...
Chronic parenchymatous nephritis	0.95	...	...	...
Chronic parenchymatous nephritis	0.59*	...	...	...
Herpes zoster; hydrothorax	1.00	...	...	...
Chronic gout	0.98	...	...	...
Chronic gout	0.85	...	...	...
Paralysis agitans (cystitis)	1.38	...	...	...
Ringworm of body	0.88	...	...	...
Fracture of hip	0.79	...	...	...
Carcinoma of stomach	0.67*	...	...	...
Ovarian cyst	1.10	...	...	...
Hodgkin's disease	1.02	...	...	...
Carcinoma of stomach	1.06	0.93	0.72	1.50
Carcinoma of stomach	...	...	...	1.19
Pleurisy, serofibrinous	...	...	...	0.82
Cardio-renal	...	...	...	0.80*
Cardio-renal	...	...	...	0.66*
Intrathoracic new growth	0.90	...	...	...

* These figures are starred to emphasize low indices.

28. "Opsonic Content in Lupus," Trans. Path. Soc., London, 1905, vol. xvi, p. 234.
29. Brit. Med. Jour., 1905, July 22.
30. For the material used throughout our work we wish to express our thanks to the staffs of the New York, St. Luke's, Roosevelt, City, French, Ruptured and Crippled, and Hudson Street Hospitals, and to Dr. Linsly R. Williams.
31. "Action on Staphylococcus by Human Blood Serum," Proc. Royal Soc., July 22, 1904, vol. lxxiv.
32. Experiments performed in the Pathological Laboratory, College of Physicians and Surgeons, Columbia University.

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question that we determined the opsonic indices of a number of conditions of disturbed metabolism, especially those of a non-infectious nature, with several organisms, with the results shown in Table 2.

At the present time it would be difficult to know how to interpret some of these figures. It is evident, however, that some very low as well as high indices may occur in the absence of any demonstrable infection. While several of the low indices are obtained in conditions in which there is some interference with the digestive function, two such cases (carcinoma of the stomach) show a comparatively high index.

We have attempted to compare the tuberculo-opsonic, staphylococcic-opsonic, streptococcic-opsonic, pneumococcic-opsonic, gonococcic-opsonic, and colon-opsonic indices in a few cases. Our results are exhibited in Table 3.

TABLE 3.—Opsonic Indices in Various Infectious Diseases to Tubercle Bacilli and Other Germs.

Case No.	Diagnosis.	Index to Tb.	Index to Staphy.	Index to Pneu.	Index to Strept.	Index to Colon.	Index to Gon.
1.	Tb. hip and spine	1.14	0.72*	...	...	...	...
2.	Tb. hip	1.00	0.66*	...	...	...	...
3.	Tb. hip	1.13	0.78	...	...	...	...
4.	Tb. hip with temp. and abscess	0.85	1.00	...	...	...	...
5.	Tb. hip and sinus	1.59*	1.00	...	...	...	...
6.	Tb. knee, apyrexia	0.78	0.80	...	...	...	...
7.	Tb. ankle	0.89	0.76	...	...	...	...
8.	Tb. ankle	1.12	1.20*	...	...	...	...
9.	Tb. pulmonary	0.93	...	0.72*	...	...	...
10.	Tb. pulmonary	0.87	0.90	...	...	1.06	...
11	Tb. glands, jaundice	0.96	...	...	...	...	...
12.	Tb. glands, of mediastinum	1.50*	0.90	...	...	...	...
13.	Pleurisy tb.? (chest fluid)	0.78	...	0.96	...	...	...
	(blood serum)	0.89	...	1.09	...	...	...
14.	Syphilis (secondary)	1.02	0.83	...	...	...	...
15.	Gon. arthritis	1.09	1.20*	...	...	...	...
16.	Typhoid	1.01	0.77	...	...	0.94	...
17.	Typhoid	0.68*	1.15	...	...	1.06	...
18.	Typhoid	0.68*	1.07	...	...	...	...
19.	Pneumonia	0.92	...	1.12	...	...	...
20.	Pneumonia	1.20*	0.54*	0.96	...	...	...
21.	Pneumonia	1.01	0.94	0.76	...	...	...
22.	Pneumonia	1.10	...	0.75*	...	...	...
23.	Abscess of liver?	1.06	0.93	0.72*	...	1.50*	...
24.	Abscess of liver	1.10	0.61*	...	...	0.17*	...
25.	Empyema	0.75*	...	...	...	1.17	...
26.	Empyema, post-pneumonic	0.86	...	...	...	0.83	...
27.	Icterus catarrhalis	0.98	...	...	...	1.02	...
28.	Appendicitis, post-op.	1.04	1.00	...	1.00	0.75*	...
29.	Chronic gon. arthritis	0.67*	...	...	...	...	1.10
30.	Chronic gon. arthritis	1.15	...	...	...	...	1.20*
31.	Tb. meningitis	0.90	...	...	...	0.89	...
32.	Pulmonary tb.	...	0.67*	...	...	0.81	...
33.	Empyema of gall-bladder	...	1.02	...	...	1.43	...
34.	Normal	0.98	1.00	...	...	...	...
35.	Normal	0.97	1.00	...	...	...	...
36.	Normal	1.00	1.00	0.88	...	...	...
37.	Normal	1.07	1.00	...	1.10	1.10	...
38.	Normal	0.92	1.00	...	0.80	0.88	...
39.	Normal	1.10	...	1.10	...	...	...
40.	Normal	0.83	...	0.91	...	...	...
41.	Normal	1.00	...	...	...	0.81	...
42.	Normal	1.00	...	...	...	1.10	...
43.	Normal	0.99	1.10	...	...	1.00	...
44.	Normal	1.05	...	...	...	1.00	...
45.	Normal	0.81	...	...	...	...	1.03
46.	Normal	1.09	...	...	...	...	1.04
47.	Normal	1.05	...	...	...	...	0.92
48.	Normal	1.00	0.97	...	...	...	0.98
49.	Normal	0.92	...	...	...	...	1.01*
50.	Normal	0.91	...	...	...	1.02	...
51.	Normal	1.02	...	...	...	0.98	...

* These figures are starred to emphasize peculiarities in indices.

From Table 3 it will be seen that the indices in a few cases to different germs vary remarkably, but not as much as one would be led to expect from Wright's work. Cases 1 and 2 are worthy of note in showing low indices to staphylococcus with normal figures for tubercle bacilli. These cases had no sinus or staphylococcus infection. Case 6, being apyrexial, should have given a low index, one would expect. Case 20, one of lobar pneumonia, shows a low index to staphylococcus, a high index to tuberculosis, and normal to pneumococcus. Case 24 is the most remarkable case in the series. This patient had an enormous abscess of the liver which had been operated on about a week before these figures were obtained. Cases 23 and 33 would also indicate a certain specificity of the opsonins.

Staphylococcus.—Wright reported 20 cases of localized staphylococcic infection, viz., furuncles, acne, sycosis, etc., with indices varying from 0.1 to 0.88, with an average for the 20 of 0.62. In 25 cases with uncomplicated localized staphylococcic lesions, Bulloch reports that the index was "below normal constantly." We have been unable to find a list of indices of normal individuals to staphylococci. We have estimated the indices of 10 normal persons to staphylococcus and found them to range between 0.82 and 1.20, the average for 19 determinations being 0.98.[33] Three cases were examined at intervals during several months and showed variations in one case between 0.84 and 1.20, in another between 0.85 and 1.10, and in a third between 0.90 and 1.02.

Pneumococcus.—While Dr. Rosenow affirms that during the course of pneumonia up to and shortly after the crisis there is probably no increase in the pneumococcic-opsonic index, Macdonald[34] has found that at the commencement of the infection, while the temperature is in the ascendant, and during the fastigium, the opsonic index is below normal. With the onset of crisis, there is a striking rise in the opsonic content, the index rising critically as high as 1.6.

Typhoid.—In convalescent typhoid fever patients, a well-marked increase in the opsonin for typhoid bacilli has been noted, the index in some cases reaching as high as 4.0.

Streptococcus.—Ruediger[16] has noted an increase in the streptococcic-opsonic index of erysipelas serum.

Tables 4, 5, 6 and 7 show the effect of various infections on the opsonic index to staphylococcus, colon bacillus, gonococcus and pneumococcus, the first cases in the tables being caused by the specific organism employed.

TABLE 4.—Opsonic Indices to Staphylococcus Progenes Aureus.

1.	Abscess of liver	0.93	
2.	Abscess of liver	0.61	
3.	Appendicitis postoper.	1.09	
4.	Acne	0.75, 1.2	
5.	Furuncle	0.86	
6.	Dermatitis vegetans	0.82	
7.	Acne	0.94	
8.	Empyema	0.95	
9.	Empyema of gall-bladder	1.02	
10.	Pleurisy, sero. fibrinous	0.95	
11.	Meningitis cerebro-spinal	1.01	
12.	Meningitis cerebro-spinal	1.02	
13.	Meningitis cerebro-spinal	0.84	
14.	Pneumonia	1.12	
15.	Pneumonia	1.09	
16.	Typhoid fever	0.77	
17.	Typhoid fever	1.15	
18.	Typhoid fever	1.07	
19.	Cirrhosis, Folin's diet.	0.45	
20.	Gonorrheal arthritis,		
		1.20,	1.01
21.	Tubercular adenitis	0.90	
22.	Tubercular hip and spine	0.72	
23.	Tubercular hip and spine	0.86	
24.	Tubercular hip and spine	0.78	
25.	Tubercular hip with temp. abscess	1.00	
26.	Tubercular hip with sinus	1.00	
27.	Tubercular knee	0.80	
28.	Tubercular ankle	0.76	
29.	Tubercular ankle	1.20	
30.	Pulmonary tuberculosis	0.99	
31.	Pneumonia	0.98	

TABLE 5.—Opsonic Indices to Colon Bacillus.

1.	Abscess of liver,		
		0.17, 0.19,	0.26
2.	Abscess of liver	0.46	
3.	Abscess of liver	1.50	
4.	Appendicitis (postop.)	0.75	
5.	Fecal fistula	0.82	
6.	Peritonitis (postop.)	1.00	
7.	Gallstones	1.1	
8.	Gallstones with jaundice	1.05	
9.	Gallstones	1.08	
10.	Empyema of gall-bladder	1.43	
11.	Pyonephrosis	1.49	
12.	Cystitis and paralysis agitans	1.10	
13.	Icterus catarrhalis	1.02	
14.	Typhoid fever	0.94	
15.	Typhoid fever	1.06	
16.	Abscess of spleen	0.73	
17.	Empyema (postpneu.)	0.83	
18.	Pulmonary tub.	1.06	
19.	Tub. glands, jaundice	1.	
20.	Empyema	1.17	
21.	Empyema	0.83	
22.	Osteomyelitis of femur	0.73	
23.	Diabetes	0.65	
24.	Normal	1.10	
25.	Normal	0.88	
26.	Normal	0.81	
27.	Normal	1.10	
28.	Normal	1.00	
29.	Normal	1.00	
30.	Normal	1.00	
31.	Normal	0.9	
32.	Normal	0.82	
33.	Normal	1.18	
34.	Normal	1.19	
35.	Normal	1.02	

33. The average count for at least three normal sera which have shown very slight variations was taken as 1.00.

34. Practitioner, November, 1905.

Of those diseases in which the staphylococcic-opsonic indices were below normal, two were caused by staphylococcus infections and three occurred in other conditions. Of those in which the indices were above normal, one was caused by staphylococcus infection and two occurred in other conditions (Table 4).

In the twelve normal cases in which the colon-opsonic index was obtained, the range extended from 0.81 to 1.19. These figures may, then, be used to define the normal limits of the colon-opsonic index in Table 5 of diseases due to the colon bacillus and other infections or diseased conditions.

Among the colon infections (Cases 1 to 13, Table 5) the index is below the normal in four conditions in which the liver, vermiform appendix, and intestine were involved; and above normal in three conditions in which the liver, kidney and gall bladder were the organs involved. Six of the 13 cases were normal. Of the diseases due to other causes than colon infections the index is below the normal in three cases, one case of diabetes and two inflammatory conditions; but in none is the index above normal.

TABLE 6—OPSONIC INDICES TO GONOCOCCUS.

Gonorrheal epididymitis-subacute	0.62
Gonorrheal epididymitis-subacute	0.77
Gonorrheal epididymitis-subacute	0.99
Gonorrheal epididymitis-subacute	0.87
Gonorrheal epididymitis-subacute	0.88
Gonorrheal epididymitis subacute	1.01
Gonorrheal urethritis-subacute, 5 days	0.97
Gonorrheal urethritis, 7 days	0.95
Gonorrheal urethritis, 2 months	0.90
Gonorrheal urethritis, 4 months	0.77
Gonorrheal urethritis, 4 months	1.05
Gonorrheal urethritis, 6 weeks	0.83
Gonorrheal urethritis, 8 months	1.23
Gonorrheal arthritis	1.23
Gonorrheal arthritis	1.10
Gonorrheal arthritis	1.09

TABLE 7—OPSONIC INDICES TO PNEUMOCOCCUS.

Acute lobar pneumonia	1.12
Acute lobar pneumonia	0.96
Acute lobar pneumonia	0.76
Acute lobar pneumonia, eleventh day	1.15
Acute lobar pneumonia, seventh day	0.75
Pulmonary tuberculosis	0.72
Pulmonary tuberculosis	1.06
Tubercular pleurisy	1.09
Normal	0.88
Normal	1.1
Normal	1.15
Normal	0.91

In the four normal cases in which the gonococcic-opsonic index was obtained, the range extended from 0.9 to 1.09. These figures may, then, be used to define the normal limits of the gonococcic-opsonic index in Table 6. Six of these cases have indices below the normal, though but one has an index below 0.75 and three have indices above 1.09.

In Table 7 the normal range in four cases was between 0.88 and 1.15. Two cases of pneumonia and one of pulmonary tuberculosis were slightly below the lower limit of the normal.

INFLUENCE OF ANTITOXINS ON OPSONINS.

The varied influence of chemicals and drugs on opsonins has already been mentioned and helps to explain the different effects on opsonins and phagocytic action of toxins of which diphtheria and tuberculosis toxins may be taken as examples. E. L. Walker[36] has shown that, while diphtheria bacilli are less susceptible to phagocytosis by human blood after destruction of the toxins by heating from 90 to 100 C., tubercle bacilli are more susceptible to phagocytosis after destruction of the toxalbumins by heating to from 80 to 100 C.

Another interesting factor and one which needs to be further developed is the influence of antitoxins on opsonins. Bradshaw and Glynn[35] have recently reported nine cases of normal men who had received diphtheria antitoxin and whose indices to tubercle bacilli averaged only 0.73. In one the index was 0.47 after three months. Walker[36] has shown that diphtheria antitoxin will apparently not neutralize these affinities of the toxin of the diphtheria bacillus which stimulate phagocytosis.

Bordet, Aronson, v. Lingelsheim and others have noted the greatly increased phagocytosis of streptococci in the presence of antistreptococcus serum. At present the principal serum used for therapeutic purposes in infections in the healing of which phagocytic immunity may be regarded as an essential phenomenon, is antistreptococcus serum. Hektoen affirms that in tests made a year ago by Dr. Ruediger and himself the antistreptococcus sera then in general use in this country were all shown to possess a lower opsonic index for various streptococci than normal horse serum, many samples being without any opsonic power, presumably on account of their age. Results of a similar nature were obtained by us with a specimen of antipneumococcus serum which was five days old; and also with an antigonococcus serum sixteen days old, which proved to have the most marked beneficial therapeutic effect.[36] It is difficult to say whether this was due to the age of the serum or to the fact that gonococci do not excite the formation of opsonins in immune sera. Our results, indicating the effect of age on immune sera, are shown in Table 8.

TABLE 8—EFFECT OF AGE ON IMMUNE SERA.

	Index.
Anti-pneumoc. serum, rabbit:	
Serum 5 days old	0.6
Serum fresh	1.6
Anti-diphther. serum, Board of Health serum (old)	0.4*
Anti-gonoc. serum, rabbit:	
16 days old	0.97*
30 days old	0.17*
Goat 12 days old	0.06*

* Normal human serum taken as 1.0.

These results would tend to show the importance of using sera which may depend for their action on their opsonic content, while they are still very fresh. It is more than possible that in infections in which leucocytosis is marked, such as pneumonia, streptococcus and staphylococcus infections, the failure hitherto to obtain the desired results with the use of immune sera prepared by adaptation against these organisms may be explained by the rapid diminution of opsonins here shown.

INFLUENCE OF VACCINES ON OPSONINS

The material which has been employed for therapeutic inoculations in other than tuberculous infections has consisted of a culture of the organism causing the infection, grown in broth or on agar. In the latter case a suspension of the bacteria is made in normal salt solution. After sterilization by exposure to a temperature of from 65 to 75 C. for half an hour and the addition of 0.5 per cent. lysol, this material, which is known as the "vaccine,"[*] is ready for inoculation. This suspension may be standardized by determining the number of bacteria per cubic centimeter of fluid.[37]

On the inoculation of any vaccine there is at first a period of diminished resistance to the organism employed. This is shown by a decline in the antibacterial power of the blood, the so-called "negative phase." Succeeding this there is an inflowing of and consequent increase in the protective elements of the blood. This is

35. Liverpool Med. and Chir. Jour., May, 1906.

36. We desire to express our thanks to Dr. Torrey, Cornell University Medical College, for the antigonococcus sera employed and for numerous cultures.

* Wright's nomenclature and explanation.

37. "Some New Procedures for the Examination of the Blood," Lancet, July 8, 1902.

the "positive phase," or the period of increased resistance. Most of these protective elements rapidly disappear, but leave behind a more or less permanent increase over the original. Wright speaks of the whole sequence as the "law of the ebb and flow and reflow and subsequent maintained high tide of immunity." Figure 1, selected from an article by Wright,[37] illustrates this "law."

This train of events succeeds inoculation of vaccine sufficient to cause a constitutional disturbance. When only a small dose of vaccine is given, the negative phase may be so insignificant and of such short duration as not to be capable of measurement, and the positive phase will be correspondingly diminished. On the other hand, if the dose of vaccine is too large, the negative phase will be unduly prolonged and a positive phase may not appear at all. The question of dose, then, is of the greatest importance, for, if too little is employed, no therapeutic effect will result. On the other hand, too large a dose is dangerous and so lowers the resistance of the host as to favor the multiplication of the bacteria. Such dangers with a single inoculation are, of course, greatly magnified by repeated inoculations. If a series of such inoculations are attempted during the negative phase, there will result a further fall in the protective substances or a "cumulation in the direction of the negative phase." Sooner or later a point will be reached when

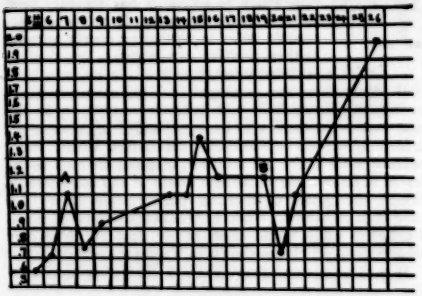

Fig. 1.—Case of a physician who had suffered from boils for four years (Proc. Roy. Soc., 1904-5, vol. xxiv, p. 150). A. Inoculated with 2,000 millions sterilized staphylococci derived from patient. B. The same repeated.

the organism will cease to respond to inoculation, and further doses of vaccine will not only do no good, but may bring the content of the blood in protective substances to a lower level than that from which it originally started.

Wright[38] considers that the result of the vaccination can not be estimated from the character of the constitutional disturbance, and with some reason urges the daily determination of the opsonic index to measure the effect. He advises the smallest possible initial dose sufficient to produce any negative phase and re-inoculation only after the subsequent positive phase has begun to diminish.

CLINICAL APPLICATION OF INOCULATION OF VACCINES CONTROLLED BY ESTIMATION OF THE OPSONIC INDEX.

Staphylococcus Infections.—Wright has cited 20 cases of very obstinate staphylococcus infection, including sycosis, boils, acne, etc., which he had treated by vaccination. These cases were selected as being particularly intractable. Various medical and surgical measures had previously been tried without success. Some were apparently cured by the vaccination, all showed a marked improvement. He suggested the possible utility of vaccinating patients before operations, especially operations on the nose and mouth, also of thus treating gleet, bronchitis, ozena, bacteriuria, etc.

Colon Bacillus Infections.—Wright and Reid[39] reported two cases of cholecystitis with persistent sinuses after operation. Both were inoculated with sterilized cultures of *Coli communis*, and as a result of the inoculations the opsonic index rose above normal, in one case to 4.0, and both soon showed marked improvement, with closure of the sinuses.

Pneumococcus.—Lyon[40] reports the use of pneumococcus vaccine in a case of pneumococcus empyema which had been running a very unsatisfactory course. Immediate improvement ensued and it resulted in entire recovery in two weeks. Figure 2 shows indices and size and intervals of inoculations.

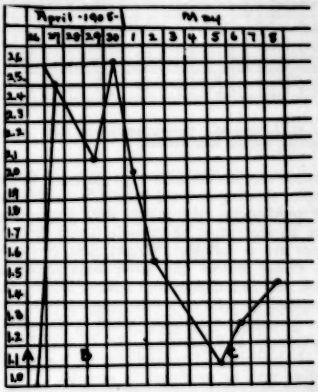

Fig. 2.—A, inoculation 100 million pneumococci; B, inoculation 200 million pneumococci; C, inoculation 100 million pneumococci.

Tuberculous Infections.—Wright has published results of treatment of a number of cases of localized tuberculous infection by means of inoculation of small doses of Koch's new tuberculin. This is analogous to other vaccines in that it consists of the comminuted bodies of tubercle bacilli brought into suspension in glycerin so that one cubic centimeter of the new tuberculin equals one milligram of tubercle powder. The cases reported thus far include tuberculous peritonitis, cystitis, glands and sinuses following an operation for their removal, tuberculosis of the subcutaneous tissues, lupus, etc. He has met with astonishingly good results in a very large proportion of cases, and his reports have done much to reinstate Koch's new tuberculin as a therapeutic remedy. The effect of tuberculin inoculations on the opsonic index in two of our cases is exhibited in Figures 3 and 4.

While the treatment of localized tuberculous infections

38. "General Principles of Therapeutic Inoculation of Vaccines as Result of Tuberculous Infections," Lancet, Dec. 2, 1905, p. 1600.

39. "Note on Two Cases of Cholecystitis Treated with Inoculation of Bacillus Coli," and "Note on the Phagocytosis of Red Blood Cells. Relationship of Temperature to Opsonic Curve in Acute Anthrax Infection," Lancet, Jan. 20, 1906, p. 159.

40. "Note on a Case of Empyema treated by Pneumococcus Vaccine, Lancet, June 24, 1905, p. 1718.

with tuberculin has met with considerable success in the hands of Wright, less promising results have been obtained in extensive tuberculous affections of the lungs. In the former case the absorption of toxins from the local site is so slight as to be insignificant in comparison with the amount of tuberculin necessary to produce a reaction on inoculation. In the case of extensive tuberculous pulmonary affections the amount of absorption of toxins is relatively much greater and, of course, more difficult to control. Hence, if absorption of large amounts of toxin from the pulmonary lesion should occur during the "negative phase" the effect would be to accentuate the degree of this phase, to diminish the power of resistance and, therefore, to aggravate the condition which the inoculations were intended to improve.

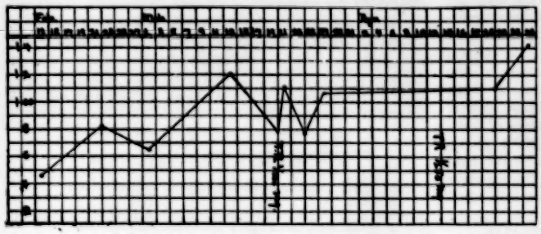

Fig. 3.—M. J., aged 35. Tuberculosis of hip joint treated with small doses of T. R. Result: Marked improvement.

Examples showing how the tuberculo-opsonic index in cases of pulmonary tuberculosis may be decreased by too great an absorption of tubercle toxins from the affected site are as follows: Wright cites two phthisical patients whose indices had never been lower than 1. They took part in a dance, both became ill, and their indices declined to 0.12 and 0.33, respectively. Another phthisical patient is mentioned whose index fell as a result of overwork to 0.2 from a level of over 1.0. If the amount of absorption of tubercle toxins is small the opposite effect may be produced by exercise by accentuation of the positive phase. This is shown in the case a child with tuberculous caries of the fibula,[41] whose tuberculo-opsonic index was raised from 1.4 to 1.7 by exercise, and from 1.0 to 1.7 by surgical manipulation. Meakin and Wheeler[42] have shown the same effect produced by exercise in cases of phthisis undergoing sanitarium treatment. By this means the tuberculo-opsonic index was raised from 0.7 to 1.5.

DIAGNOSTIC VALUE OF THE OPSONIC INDEX.

It has been thought that by determining the opsonic index on a case of doubtful diagnosis, some aid might accrue, especially if the reaction with various organisms should prove specific. Three methods have been devised:

A. Obtaining the opsonic index in blood serum.

B. Comparing the opsonic index of heated with unheated blood serum.

C. Comparing the opsonic index of blood serum with the index of exudate or transudate from the same case.

With reference to these methods, Wright and Reid[43] have furnished the only contribution. Their conclusions are as follows when diagnoses of tuberculosis have been attempted by means of the tuberculo-opsonic index.

A.—1. When a series of measurements of the tuberculo-opsonic index of the blood is persistently low, it may be inferred in the cases in which there is evidence of a localized bacterial infection which suggests tuberculosis that the infection is tuberculous in character.

2. When repeated examinations reveal a persistently normal tuberculo-opsonic index, the diagnosis of tubercle may with probability be excluded.[44]

3. When there is revealed by a series of blood examinations a constantly fluctuating opsonic index, the presence of active tuberculosis may be inferred.

4. When only a single blood examination is available, if the index is low, tuberculosis, either localized or systemic, may be inferred. If the tuberculo-opsonic index is high, systemic tuberculosis infection which is active or has recently been active may be inferred. If the tuberculo-opsonic index is normal or nearly normal, neither positive nor negative conclusions are warranted.[45]

B. Since there are developed in blood serum in those undergoing inoculation with tubercle vaccine, or as the case may be in those who have responded to tuberculous infection, certain opsonic-like substances which resist heating to 60 C. for ten minutes, tuberculosis may be inferred in those cases whose sera retain in any considerable degree the power of inciting phagocytosis after they have been so heated. Whether this point can be of much diagnostic value would seem rather doubtful from our observations which are shown in Tables 9 and 10.

It will be noticed from Table 9 that phagocytosis is largely destroyed in all cases in which the serum was heated to 60 C. for ten minutes, when a concentrated (1.6 per cent.) salt solution was employed. In one set of experiments[4] the normal serum gave the highest results after heating.

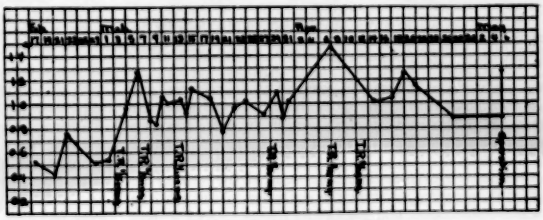

Fig. 4.—Case of tuberculosis ankle. No improvement clinically.

Table 10 shows several interesting points. It will be noticed that phagocytosis of all sera after heating is greater when a weak salt solution (0.1 per cent.) is employed, also that the tuberculous cases show somewhat

41. Medico-Chirurg. Trans., 1905, vol. lxxxix.
42. "Observations on Opsonic Index of Patients undergoing Sanitarium Treatment for Phthisis," Brit. Med. Jour., Nov. 25, 1905, p. 1396.
43. "Determination of Presence or Absence of Tubercular Infection by Examination of Patient's Blood," Proc. Royal Soc., 1906, vol. lxxvii.
44. Our results would lead to a still further qualification of this statement.
45. Our observations tend to confirm this statement.

higher indices than the normal. The patient with a tuberculous ankle in Experiment 1 had received five or six injections of therapeutic doses of Koch's new tuberculin during the three preceding months without any clinical improvement.

TABLE 9.—TUBERCULO-OPSONIC INDEX IN UNHEATED SERUM AS COMPARED WITH SERUM HEATED AT 60° C. FOR 10 MINUTES. EMULSION OF BACILLI IN 1.6 PER CENT. NaCl.

Experiment.	Diagnosis.	Unheated Index.	Heated Index.
1	Normal	1.0	0.03
	Normal	1.04	0.02
	Pulmonary tb	1.0 *	0.09*
	Pulmonary tb	0.59*	0.03*
2	Tb. spine	0.80	0.00
	Tb. ankle	0.79	.03
3	Normal	1.00	.03
	Tb. peritoneum, empyema	1.02	.03
	Tb. hip	1.20	.02
	Tb. ankle	0.75	.02
	Normal	1.03	.03
	Tb. ankle	1.00	.2
	Tb. hip with temp	1.17	.05
	Dorsal Pott's	0.73	.02
	Tb. hip, Psoas abscess	0.80	.1
4	Tb. hip with temp	0.80	.1
	Tb. spine, paraplegia	0.92	.02
	Normal	1.00	.25*
	Tb. ankle	0.92	.15
	Pulmonary tb	1.00*	.05*
	Pulmonary tb	0.41*	.02*
	Normal	....	.1
5	Children of tuberculous parents	1.00	.03
		0.98	.30*
		0.95	.02
		0.84	.03
		0.84	.00
		0.80	.00
		0.93	.03
		0.40	.00

* Figures are starred to emphasize peculiarities of indices.

TABLE 10.—TUBERCULO-OPSONIC INDEX IN UNHEATED SERUM AS COMPARED WITH SERUM HEATED AT 60° C. FOR 10 MINUTES. EMULSION OF BACTERIA IN 0.1 PER CENT. NaCl.

Experiment.	Diagnosis.	Unheated.	Heated.
1	Tb. ankle, ante-operative	0.80	0.45
	Tb. ankle, post-operative	1.20	1.60
	Normal	1.00	0.22
	Normal	1.17	0.24
2	Pneumonia tuberculosis	0.84	0.30
	Pneumonia tuberculosis	0.86	0.20
	Normal	1.02	0.14
	Normal	0.73	0.14

Wright and Reid[46] first called attention to the effect of the concentration of the salt solution on phagocytosis.

C. It is claimed by Wright that bacteria multiply in those regions of the body in which the amount of opsonin is low ("regions of low bacteriotropic pressure"), and his observations tend to show that fluids or pus from such regions contain a much smaller amount of opsonin than the blood serum obtained in the usual way from the finger. Assuming the specificity of the opsonins, he concludes that the presence of a tuberculous infection may be inferred when the tuberculo-opsonic index of such fluids is much lower than that of the blood serum. This method of diagnosis in tuberculous and other conditions has yielded the following results in nine of our cases:

1. Case of herpes zoster with serothorax (probably non-tuberculous):
   - Tuberculo-opsonic index of blood serum 1.0
   - Tuberculo-opsonic index of chest fluid 1.0
2. Case of tuberculous caries of spine with empyema:
   - Tuberculo-opsonic index of blood serum 0.8
   - Tuberculo-opsonic index of pus from chest 0.3
3. Case of pleurisy with effusion:
   - Tuberculo-opsonic index of blood serum 0.75
   - Tuberculo-opsonic index of chest fluid 0.89
   - Pneumococcic-opsonic idex of same case:
     - blood serum 1.00
     - Chest fluid 0.95
4. Case of empyema following pneumonia:
   - Tuberculo-opsonic index of blood serum 0.84
   - Tuberculo-opsonic index of pus from chest 0.00
5. Case of tuberculous meningitis (clinically):
   - Tuberculo-opsonic index of blood serum 0.9
   - Tuberculo-opsonic index of spinal fluid 0.98
   - Colon-opsonic index of same case:
     - Blood serum 0.89
     - Spinal fluid 0.83

In the following the difference between the colon-opsonic index of the blood and of the body fluids is shown:

6. Case of carcinoma of the stomach with ascites:
   - Colon-opsonic index of blood serum 1.19
   - Colon-opsonic index of ascitic fluid 1.15
7. Case of sero-fibrinous pleurisy with effusion:
   - Colon-opsonic index of blood serum 0.83
   - Colon-opsonic index of chest fluid 0.78
   - Staphylococcic-opsonic index of same case:
     - Blood serum 0.95
     - Chest fluid 0.92
8. Case of cardio-nephritis with hydrothorax:
   - Colon-opsonic index of blood serum 0.99
   - Colon-opsonic index of chest fluid 0.80
9. Case of cardio-nephritis with hydrothorax:
   - Colon-opsonic index of blood serum 0.66
   - Colon-opsonic index of chest fluid 0.66

Wright and Reid have cited several cases in which the difference between the index of the blood serum and the tuberculous exudate was marked. Case 2 is in accordance with their results. In Case 5 a diagnosis of tuberculosis is not suggested by the indices. The results in Case 4 would, according to Wright and Reid, justify a diagnosis of a tuberculous condition which did not exist. All the other cases show approximately no difference in the indices of blood serum and body fluids.[47]

Whether opsonins are limited to blood serum, exudates, transudates and chyle or are found in all body fluids is a matter of some interest. With this in view the contents of an ovarian cyst were tested with the following result:

Case of pulmonary tuberculosis having a tumor of the abdomen of which the diagnosis lay between ovarian cyst and tuberculosis of peritoneum. Operation showed a large ovarian cyst:
- Tuberculo-opsonic index of blood serum 0.95
- Tuberculo-opsonic index of cyst fluid 0.43
- Colon-opsonic index of same case:
  - Blood serum 1.10
  - Cyst fluid 0.68

The difference noted in this case between the indices of blood serum and cyst fluid may be due to the fact that the latter is a secretion and neither an exudate nor a transudate.

INFLUENCE OF HEREDITARY TENDENCY ON TUBERCULO-OPSONIC INDEX.

The question whether low indices are the cause or the effect of the infection is one of considerable interest. The tuberculo-opsonic indices of a number of apparently healthy children of tuberculous parents are as follows:

TABLE OF CHILDREN OF TUBERCULOUS PARENTS.

	April 21.	April 28.
M. D.	0.85	0.65
H. D.	1.10	1.43
K. D.	1.08	1.06
L. M.	1.10	0.95
L. L.	1.10	0.83
L. J.	1.20	0.73
R. I.	...	0.72
H. R.	...	0.87
E. R.	...	0.88
N. R.	...	0.92
G. N.	...	0.94
J.	...	0.91

Several low indices occur in this series. In a number of picked cases of "sanitarium cures" of phthisis in its early stages, Bulloch constantly found low indices. Here,

46. "Spontaneous Phagocytosis," Proc. Royal Soc., 1906, vol. lxxvii, 1906.

47. In this connection it is worth observing that Simon in a recent paper, "A Contribution to the Study of Opsonins," has found that while transudates contain opsonins, the amount contained is ordinarily less than in the blood serum. For example, in a specimen of fresh hydrocele fluid he found only 6 per cent. of phagocyting leucocytes for a dilution of 1 to 20, and with a sample of ascitic fluid, 10 per cent. with the same dilution.

again, it would be important to know whether such cases relapsed, as so frequently happens. Bulloch believes the low index probably due to some hereditary or acquired imperfection in the mechanism by which antitropins are manufactured. In this connection it is interesting to note that Simon has recently found the opsonic content of serum to be diminished in some cases by starvation.

PRACTICAL VALUE OF OPSONIC INDEX.

In reviewing the work which has already been accomplished on opsonins,[48] the question of what practical use they may have is one of greatest interest.

The great difficulty will arise from the fact, probably, that changes more or less profound are indicated at times by only slight variations of the indices, and that the variation is frequently not far beyond the limits of error in a method where opportunities for small errors in technic are numerous.

Some aid in diagnosis may be had by determination of single indices; but before this can be considered a reliable method considerable work must be done to determine the degree of specificity of opsonins. Wright and Reid's work indicates that some diagnostic aid may be obtained by comparison of serum and exudates, and by the methods of heated and unheated serum.

A wider field of application will probably be in the control of inoculation of vaccines to determine the optimum dosage and regulation of frequency of the same, but this will be somewhat limited by the clinical difficulties of the method.

A field as yet but little explored, in which it may prove of great use, is in the determination of susceptibility to infection, especially in the inherited susceptibility to tuberculosis.

Perhaps its greatest usefulness will be found in the laboratory, where it may prove to be a convenient and rapid method of testing the virulence of organisms and the strength of sera which are dependent on opsonins for their beneficial effects.

In conclusion, we desire to thank Drs. Ewing, Wadsworth, Theobald Smith, Baldwin, Twichell, Dunham and Torrey for bacteriologic material supplied. We also desire to acknowledge very capable assistance on the part of Dr. Millicent Hopkins.

48. For additional literature the reader is referred to: Wright: "Treatment of Furunculosis, etc., by Inoculation of Staphylococcus Vaccine," Lancet, March 29, 1902; also "Treatment of Acne Furunculosis," Brit. Med. Jour., May 7, 1904; "Inoculation Treatment of Tuberculosis," Clinical Jour., Nov. 9, 1904; "The Serum Reactions of Tuberculosis," Lancet, May 9, 1903; Wright and Reid: Proc. Royal Soc., 1906, vol. lxxvii, p. 194; "Therapeutic Inoculation of Bacterial Vaccines," Brit. Med. Jour., May 9, 1903; "Certain New Methods of Blood Examination with Some Indications of Their Clinical Importance," Lancet, Jan. 23, 1904, p. 215; "A Short Treatise on Antityphoid Inoculation," London, 1904; "Measurements of Bactericidal Power of Blood," Proc. Royal Soc., 1902, August, vol. lxxi, p. 54; "Procedures for Testing and Judging by Naked Eye of Agglutinating and Bacteriolytic Effects Exerted by Sera (Spontaneous Agglutination)," Lancet, 1903, July 25, p. 214; Lancet, 1904, Aug. 6, p. 411; Wright and Reid: Proc. Royal Soc., 1906, vol. lxxvii, p. 194; Wright and Douglas: "Tuberculosis," Lancet, Oct. 22, 1904, p. 1138; Bulloch and Atkin: "Experiments on the Nature of the Opsonic Action of the Blood Serum," Proc. Royal Soc., 1905, vol. lxxiv, p. 379; Smith, R. Greig: "Agglutination and Leucocytosis," Proc. Linn. Soc., New South Wales, 1905, part 2, July 26; Cheyne: "Wright's Method of Treating Tuberculosis," Lancet, Jan. 13, 1906, p. 78; Park and Williams: Jour. Exp. Med., 1905, vol. vii, p. 403; Craw, J. A.: "Mechanism of Agglutination," Jour. of Hyg., January, 1905, vol. i, p. 126; Houston: "Dermatologic Therapeutics," Brit. Med. Jour., 1905, vol. i, p. 854 (A Reply); Pearce and Winne: Amer. Jour. Med. Sci., October, 1904.

Naming of Carbon Compounds.—The prefix iodo- is sometimes used to indicate the element iodin, thus iodobenzene is C_6H_5I, but the term is also used to indicate the group—IO_2.—*Pharm. Rev.*, August, 1906.

THE ROLE OF NUCLEIN IN THE ANIMAL ECONOMY.

WITH A STUDY OF URIC AND PHOSPHORIC ACID EXCRETION IN ONE HUNDRED AND TWENTY-NINE CASES.*

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The motive for presenting this clinical study was found in some statements coming from respectable but forgotten quarters of current medical literature to the effect that the excretion of uric and phosphoric acids rose and fell together, statements contrary to my own observations. While I soon found that the simple refutation of these careless propositions would be very much like setting up a man of straw for the pleasure of knocking it over, yet the absolute and relative excretions of these final products of metabolism, under average conditions of diet in chronic nutritional disease, seemed to me to be of both practical and scientific interest. I therefore asked my assistant to glean from my notes the necessary data from about one hundred unselected cases. The result, as shown in the appended table, was 192 analyses in 129 cases, comprising 36 different diseases. With reference to the exact diagnosis of these cases it should be remarked that, unlike the acute infectious diseases, chronic nutritional disturbances do not lend themselves with facility to a precise classification adapted to tabular presentation. Two or three alternative diagnoses often present themselves, while obviously only one can be selected.

The method used in estimating the uric acid was the original Hopkins method by precipitation, first, with ammonium salts and, on resolution, again precipitating with HCl, as I had not yet adopted the simpler time-saving Folin modification. The phosphoric acid was estimated in terms of phosphoric anhydrid by the uranium process. In this connection I wish to say that my clinical laboratory adjoins my consultation room, and that, while most of the work was done by my former assistant, Dr. B. W. Rhamy, it was all done under my personal inspection, the titrations being often repeated in my presence in cases in which unusual results were obtained. In order to insure accuracy, I have frequently weighed a decigram of c. p. uric acid with the analytical balance and had the titration process verified in this way. I, therefore, feel that I can vouch for the accuracy of the results.

The particular reason for jointly studying uric and phosphoric acids from a clinical point of view lies in the fact that they are derived from the nucleins of the tissues and fluids of the animal body. With reference to uric acid this is exclusively true, and, while the possibility of the synthesis of uric acid from other bodies can not be denied, as it certainly occurs in birds even from urea, all the evidence tends to prove that uric acid in the human subject is either an immediate cleavage product of nucleinic acid or an oxidation product of other purin bases which are themselves end results of the disintegration of nucleinic acid, which is a product of the cleavage of nuclein, and this, in turn, from nucleoproteids.

With the phosphoric acid the case is entirely different. Besides the true nucleoproteids, we have another group of proteids, known as pseudonucleins or paranucleins,

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

which are also rich in phosphorus, but which do not contain the purin group and hence do not give rise to the formation of uric acid. The casein of milk and the vitellin of egg yolk belong to this group of phosphorus-containing, purin-free proteids, and it is perfectly obvious that variations in the quantities of two such important foodstuffs can increase or diminish the output of the urinary phosphates without directly influencing either the formation or excretion of uric acid. If the nucleoalbumins could either be given in fixed amounts or eliminated from the diet, then the uric and phosphoric acid excretions would, in a general way, rise and fall together, although the percentage of phosphorus varies greatly in different nucleins. But, of course, such conditions could only be secured by the strictest experimental control.

The rôle of the nucleins, the probable antecedents of all the purin bodies, including uric acid, and very rich in phosphorus, appears to me to be one of the most interesting problems confronting both the clinician and the physiologic chemist to-day. They are widely distributed, but are especially prevalent in the nuclei of cells; hence glandular organs, such as the pancreas and the liver, made up, for the most part, of masses of cells, contain relatively large amounts. But the fluid constituents of the body also contain them in variable quantities. Vaughan and Novy have clearly demonstrated their presence in blood serum and, although this was denied by Hahn and others, it was fully confirmed by Lillienfeld, who found nucleinic acid in blood serum. It may, therefore, be considered definitely settled that the blood serum contains nuclein, which is, from any point of view, a most reasonable supposition, as the nucleins from disintegrating nucleoproteids in the leucocytes and tissue cells in general would naturally, if not necessarily, find their way into the fluid portion of the blood stream, their solution being favored by this alkalin medium.

The nucleins which, acording to Bunge and others, are acids, have most remarkable physical and chemical properties and stand in a class by themselves. Although they usually exist in combination with proteids as nucleoproteids, they are sometimes found, though I believe not in the human body, without combination with a proteid molecule. One of the most striking characteristics of the nucleins is their invulnerability to the action of gastric juice. This is the usual method of their isolation, as the action of pepsin and HCl dissolves the proteid, leaving the nuclein residue unaffected. In regard to the action on nucleins of intestinal digestive fluids there seems to be some conflict of opinion. It is stated by some that the nucleins are disintegrated by trypsin, although investigations carried out in the laboratory of Hoppe-Seyler seemed to show that they were entirely unaffected at least by artificial pancreatic digestion. The latest researches indicate that the nucleinic acids are somewhat changed by trypsin, but a complete cleavage with the liberation of phosphoric acid on the one hand and purin bases on the other is apparently disproven by the investigations of Iwanoff. It has been found, further, that considerable quantities of nuclein are present in the feces of dogs and it must be considered a mooted question to what extent, if at all, the nucleins are digested and absorbed.

We are waiting in the field of clinical medicine for two important services from the physiologic chemist. The first is the working out of an exact method for the accurate quantitative estimation of the nucleins which, so far as I know, has not been accomplished. When this is done the second service needed is an experimental study by exact methods of the proportion of the nuclein of the foods which reappear in the feces. Bunge says it is an entirely unsettled question as to whether the nucleins are absolutely indigestible or not. If they are indigestible they are certainly unabsorbable and our present conception of their rôle in dietetics would be entirely wrong. Such a conclusion does not appear credible in the light of clinical experience, and yet the increased elimination of uric acid on a diet rich in nucleins has been assumed by so important an investigator as Horbaczewski to be the result, not of the absorption and subsequent transformation of the nucleins of the food into uric acid, but the production in some way of a leucocytosis, to which he ascribes the increased uric acid output, although it seems to me that the part played by the leucocytes in the formation of uric acid has been exaggerated, insufficient stress being placed on the masses of nucleated cells found elsewhere, especially in the large glandular organs.

If the nucleins of food are finally proven to be indigestible, the only possible source of the nucleoproteids would be a synthesis from other proteids. The possibility of the synthesis of nucleins must be admitted on the basis of certain observations on the lower animals. Miescher, for instance, studying the ovary of the salmon, which travels up the Rhine annually to spawn, found that during the migration, which lasts from 4 to 14 weeks, the ovary increased from .4 per cent. to over 19 per cent. of the weight of the entire animal. The ovary is composed very largely of nuclein, and yet the salmon, during the entire journey, takes no food whatever, as the digestive canal is constantly empty. He found, further, that the large lateral trunk muscles diminished in weight sufficiently to account for the increase in the weight of the ovaries. This observation amounts practically to a demonstration that the nuclein of the ovaries was formed by a synthetic process from the muscular tissue, which is very poor in nuclein. While such facts can not be bodily transferred to human physiology, yet, taken in connection with the doubtful digestibility of the nucleins of food, they strongly suggest a synthetic origin to a greater or less extent for the nucleins of the body. The clinical importance of such a fact must be obvious to every one.

As bearing on the absorbability of the nucleins, it should be stated that they are decomposed to a certain extent by boiling with water, and that the ordinary culinary processes may liberate varying quantities of purin bodies, which are, of course, readily soluble and absorbable. In the presence of an acid, the cleavage is more rapid and complete. If the uncooked nucleins are entirely indigestible, then raw meat, if parasitic ova could be excluded, would furnish for the body a purin-free proteid food. On the other hand, the purin bodies can be very largely removed from finely comminuted cooked meat by repeated washings.

The nucleins appear to be both germicidal and in some of their cleavage products toxic in character. It seems to me that nothing can be more conclusive than the experiments of Vaughan, demonstrating the germicidal action of solutions of nucleins derived from the blood serum by the process of artificial gastric digestion and diluted with just enough culture medium to reproduce exactly their percentage solution in the blood. His experiments with cholera bacillus, with *Staphylococcus pyogenes aureus* and other organisms showed a remark-

able diminution in the number of colonies in a very brief time. It appears extremely probable that the nucleoproteids of the blood serum are at least in part the active agents in bacteriolysis and, further, that phagocytosis itself is a phenomenon of the nuclein contained in the leucocyte. The toxins of diphtheria and tetanus have actually been precipitated *in vitro* by nucleinic acid.

On the other hand, there appears to be accumulating evidence of the toxic character of some of the products of nuclein disintegration. As an indication of the remarkable analogues of the nucleins it is worth noting at this point that the chemical products of certain toxicogenic germs which were supposed to have caused typhoid fever were found by Freer to be nucleins. It should be stated at once that uric acid does not belong to the toxic list and that the evidence so far goes to show that uric acid in solution as an alkalin urate is non-toxic, and that its exclusive rôle in pathology is that of a mechanical irritant when precipitated from solution. The precise quantity which is eliminated may bear little or no relation to the amount formed within the organism. It has been estimated, for instance, on the basis of careful investigation by Burian and Schur, that only about 1/20 to 1/30 of the uric acid formed in carnivora is excreted as such. In dogs the quantity is about 1/6, while in man about ½ of the uric acid formed is thus excreted. While there is no reason to suppose that uric acid is to any large extent the antecedent of urea, there is the best of proof to show that uric acid is in part thus disposed of. This transformation has been demonstrated to take place in the liver of animals which had been removed from the body and an artificial circulation kept up. Uric acid thus perfused through the liver reappears as urea, so that in diseases such as leukemia, in which the quantity of uric acid excreted is notably increased, it may not be due at all to an increased formation of uric acid as a cleavage product of nucleins, but a more or less complete functional failure of those organs, a part of whose normal function it is to convert a probably variable proportion of the uric acid by a simple process of oxidation and hydrolysis into urea. Besides the liver, the muscular apparatus and probably other organs and tissues aid in the performance of this function, the precise arrangement varying with different animals.

It is the other less highly oxidized members of the group of purin bodies to which we must look for an explanation of the toxic phenomena resulting from nuclein disintegration rather than to uric acid, the most highly oxidized of the purin bodies and very readily converted into urea. Burian and Schur have shown that these bodies cause fever when injected into the circulation and the researches of Mandel point strongly to these bodies as the cause of certain types of aseptic fever. We have long suspected on clinical grounds that such fevers were due to vague, indeterminable metabolic disturbances, but we seem to be on the eve of a scientific exposition of their natural history. We are acquainted with four of these bases which we know are derived from the cleavage of nuclein, viz., xanthin, hypoxanthin, adenin and guanin, and some of these have been proven experimentally to be toxic in character. Their relationship to uric acid is not altogether clear, and probably is not constant. That they are interconvertible with the uric acid group has been substantially shown by Fischer, according to Vaughan, while Horbaczewski has reached the conclusion that in the cleavage of nuclein uric acid is the product if the cleavage is followed by oxidation and xanthin bases if it is not. It is possibly too soon to say that these xanthin bodies are intermediate steps in the formation of uric acid and urea, but Hammarsten thinks that such is probably the fact. Bunge says that they undoubtedly belong to the antecedents of urea and uric acid, as they exist in too large quantities in the tissues and too little in the urine to permit of their elimination unchanged.

In short, the latest researches along these lines appear to be forcing us back toward a fuller acceptance of the theory of oxidation as the method for disposing of these intermediate products of metabolism, the permanence of which would endanger the integrity of the organism. In the course of retrograde change the nucleoproteid is broken up into nuclein and proteid, the nuclein into one of the different forms of nucleinic acid and a proteid molecule, while nucleinic acid in its final cleavage gives us phosphoric acid and the purin bodies which include uric acid and the four nuclein bases already mentioned and many others, with the source of which we are not yet acquainted.

It thus becomes perfectly obvious that the quantity of purin bodies which have a lower oxygen content than uric acid is much more important from a clinical point of view than the quantity of uric acid itself, and their determination should be the line of investigation for the future. It is true that we have as yet no absolute standards, although Flatow and Reitzenstein found from 15 to 45 mg. in twenty-four hours. Any estimation of the purin bodies in the urine of patients who are drinking large quantities of tea or coffee is practically useless unless, indeed, it should be shown that heteroxanthins and paraxanthins are themselves toxic, as Solomon, Fischer and others hold. Furthermore, we must recognize, according to the best observers, individual as well as a specific and generic variation. In other words, the output of purin bodies, including uric acid, is constant for the individual under identical conditions of diet, etc., but varies as between different individuals.

But we can at least note the rise and fall of the xanthin bodies under different lines of diet and treatment. They can best be estimated by Salkowski's method, although it is very laborious and time-consuming.

Such appear to me to be the principal facts, with some admixture of more or less plausible hypothesis concerning the rôle of that remarkable group known as nucleins. When their physiologic chemistry has been fully written and their physiologic effects have been fairly well worked out an immense stride will have been made in the pathology of a large group of diseases, including gout and allied disorders and various acute and chronic toxic phenomena which are at present only imperfectly understood or not understood at all.

With reference to the table showing the parallel excretion of uric and phosphoric acid, only a few comments can be made, owing to the distance which I have been led in this preliminary discussion, fragmentary as it has been. It shows very wide fluctuations in the total output of both uric and phosphoric acid under the average conditions in a wide variety of chronic diseases, and it clearly shows what would be anticipated from the facts already set forth, that the variations in the excretion of these two products of metabolism bear no close relationship to each other. The average excretion of uric acid for the entire series of cases was .90 gm., while that of phosphoric acid, expressed in terms of phosphoric anhydrid, was 1.98 gm., the ratio being as 1 to 2.1. In a few cases the phosphoric acid was less than

TABLE OF URIC AND PHOSPHORIC ACID EXCRETION.

Case No.	Total Quantity Urine in 24 Hours. Uric Acid.	Total Quantity Urine in 24 Hours. Phos. Acid.	Ratio of Uric Acid to Phosphoric Acid, the former being assum'd as 1 Uric Acid.	Ratio of Uric Acid to Phosphoric Acid, the former being assum'd as 1 Phos. Acid.
ALKAPTONURIA.				
1.	.597	1.03	1	1.72
ANEMIA.				
2.	.994	1.38	1	1.14
3.	.55	.9	1	1.63
4.	.5	2.33	1	4.76
Av.	.57	1.55	1	2.5
ANGINA PECTORIS.				
5.	.26	4.2	1	16.1
	1.264	2.25	1	2.2
	.797	2.1	1	2.63
	.725	.945	1	1.29
6.	.02	2.9	1	2.016
Av.	.56	2.469	1	4.45
ARTHRITIS.				
7.	.597	3.72	1	6.23
BELL'S PARALYSIS.				
8.	1.43	1.87	1	1.3
9.	.569	.455	1	.8
Av.	.999	1.162	1	1.16
BRAIN TUMOR.				
10.	1.73	2.82	1	1.62
	.926	2.14	1	2.31
11.	1.24	3.03	1	2.44
	1.15	2.99	1	2.59
12.	.335	1.2	1	3.34
13.	.469	.533	1	1.13
Av.	1.005	2.118	1	1.11
BRAIN SYPHILIS.				
14.	.39	1.38	1	3.48
	.74	1.23	1	1.63
15.	.8223	2.04	1	2.21
Av.	.65	1.74	1	2.67
BRIGHT'S DISEASE.				
16.	1.44	1.52	1	1.04
	.74	1.79	1	2.42
	1.51	3.	1	1.96
	1.13	2.3	1	1.96
17.	1.64	1.62	1	.986
	.47	1.33	1	2.82
	1.29	1.68	1	1.3
	.606	1.08	1	2.29
	.335	1.22	1	1.46
18.	.49	1.08	1	2.2
19.	1.22	2.25	1	1.84
20.	.55	.595	1	1.7
21.	.275	2.2	1	8.
22.	.1185	.54	1	4.55
23.	1.1	2.6	1	2.35
24.	1.15	2.72	1	2.36
25.	1.07	2.5	1	2.27
26.	.37	1.19	1	3.23
Av.	1.046	1.808	1	1.72
BRONCHITIS, CHRONIC.				
27.	.742	1.47	1	1.99
28.	.43	.65	1	1.51
Av.	.586	1.06	1	1.8
COLITIS.				
29.	1.274	3.64	1	2.85
30.	.51	1.47	1	1.81
31.	1.34	2.62	1	1.96
32.	.19	1.156	1	6.08
33.	.27	.72	1	2.66
34.	1.86	.55	1	.57
35.	.1	.56	1	5.6
36.	.297	.949	1	3.19
37.	.347	.695	1	2.99
38.	.99	2.97	1	3.76
	.483	2.16	1	5.
	.914	2.5	1	2.82
	1.296	5.	1	3.86
	.72	2.87	1	4.29
	.956	2.55	1	2.66
	.945	6.42	1	6.5
	1.	2.79	1	2.79
	1.24	3.15	1	2.53
	.726	3.48	1	4.69
	1.11	4.2	1	3.15
Av.	.944	2.57	1	2.79
DIABETES.[1]				
39.	6.	2.6	1	.433
	3.17	2.17	1	.68
	4.62	2.9	1	.62
	1.9	2.26	1	1.18
	3.85	2.67	1	.84
	1.36	1.76	1	1.4
40.	1.25	4.76	1	3.87
	1.48	2.56	1	1.72
41.	4.04	2.62	1	.648
	2.41	3.59	1	1.49
42.	.95	2.5	1	2.64
43.	.9412	2.61	1	4.06
Av.	2.097	2.75	1	.82
EPILEPSY.				
44.	.46	.85	1	1.84
	.66	1.2	1	1.81
45.	1.29	4.68	1	3.47
Av.	.80	2.17	1	2.7
GASTRIC CANCER.				
46.	.906	2.4	1	2.64
47.	.75	1.6	1	2.13
Av.	.828	2.	1	2.4
GASTRIC ULCER.				
48.	.52	.41	1	.78
49.	.23	2.41	1	9.17
Av.	.37	1.41	1	3.8
GASTRITIS.				
50.	.593	.87	1	1.46
	.859	1.2	1	1.39
	1.54	2.85	1	1.97
	1.06	3.5	1	3.3
	.704	2.9	1	4.11
	.535	.94	1	2.8
	2.165	3.9	1	1.8
	1.04	1.94	1	1.86
51.	.45	1.14	1	2.53
	.53	1.48	1	1.78
	.685	.45	1	.656
	.9	.9075	1	1.108
	.75	1.32	1	1.76
	.3773	1.34	1	3.71
	.554	1.22	1	1.44
52.	2.07	1.86	1	.898
	.76	1.92	1	2.52
53.	.79	1.53	1	1.93
	.656	1.35	1	2.06
54.	1.52	1.16	1	.878
55.	1.12	1.95	1	.74
56.	3.75	4.34	1	1.15
	1.5	2.25	1	1.75
57.	.39	1.04	1	2.58
58.	1.5	1.95	1	1.5
59.	.522	.85	1	1.59
60.	1.23	1.22	1	.98
61.	.807	2.14	1	4.22
62.	.61	.92	1	1.46
63.	.683	1.92	1	2.81
64.	.71	1.24	1	1.74
65.	1.2116	1.76	1	1.44
66.	1.04	2.66	1	2.55
67.	.329	1.	1	3.96
68.	.3435	.3125	1	.91
69.	.66	1.34	1	1.83
70.	.6885	.9	1	1.014
71.	.755	1.62	1	2.21
Av.	.982	1.66	1	1.77
	.597	1.03	1	1.72
ERYSIPELAS.				
72.	.975	2.51	1	2.89
HEART DISEASE.				
73.	2.21	2.29	1	.93
	.646	1.77	1	2.74
	.333	.975	1	2.93
74.	.1	.41	1	4.1
75.	.22	.99	1	4.5
76.	1.5	2.25	1	1.5
77.	1.77	1.97	1	1.1
78.	.71	3.29	1	4.77
79.	.726	2.5	1	3.13
80.	.225	.7	1	3.07
81.	.39	1.29	1	3.3
82.	.52	2.53	1	7.43
Av.	.75	1.612	1	2.14
HEPATIC CIRRHOSIS.				
83.	.14	.49	1	3.4
HODGKIN'S DISEASE.				
84.	.648	1.69	1	2.6
HYPERCHLORHYDRIA.				
85.	.459	1.62	1	3.56
	.52	2.34	1	4.49
Av.	.489	1.98	1	4.04
HYSTERIA.				
86.	2.61	.818	1	.19
	.606	.327	1	.56
87.	.522	1.05	1	1.97
Av.	1.245	6.35	1	.5
INSANITY.				
88.	3.48	.98	1	.269
	1.06	1.5	1	1.41
	.9	2.43	1	2.7
89.	.456	1.3	1	2.82
	.432	1.575	1	3.64
90.	.372	1.05	1	2.74
91.	.31	.725	1	2.5
92.	.297	1.55	1	5.05
93.	1.	1.43	1	1.43
Av.	.823	1.372	1	1.66
LANDRY'S PARALYSIS.				
94.	1.	2.35	1	2.35
LEUKEMIA.				
95.	1.328	2.36	1	1.74
	1.06	1.57	1	1.48
Av.	1.49	2.36	1	1.57
LOCOMOTOR ATAXIA.				
96.	1.19	2.037	1	2.89
97.	.106	.92	1	8.67
Av.	.648	2.	1	3.1
MIGRAINE.				
98.	.775	1.9	1	2.45
NEURASTHENIA.				
99.	.52	1.74	1	3.34
	.654	1.4	1	2.14
100.	.233	1.045	1	4.49
101.	.52	1.62	1	1.96
102.	.596	1.32	1	2.21
	.644	1.15	1	1.78
103.	1.09	1.95	1	1.79
104.	.59	.9	1	1.52
105.	.54	1.	1	1.85
106.	1.26	6.22	1	5.17
107.	.34	.44	1	1.29
108.	.356	.89	1	2.49
109.	.191	1.	1	5.23

1. Uric acid estimation by ordinary methods is not considered reliable in diabetes as there appears to be some constituent of diabetic urine which increases the result (see preceding paragraphs).

(Continued on next column.)

(Continued on next page.)

TABLE OF URIC AND PHOSPHORIC ACID EXCRETION—*Continued.*

Case No.	Total Quantity Urine in 24 hours. Uric Acid.	Total Quantity Urine in 24 hours. Phos. Acid.	Ratio of Uric Acid to Phosphoric Acid, the former being assum'd as 1. Uric Acid.	Ratio of Uric Acid to Phosphoric Acid, the former being assum'd as 1. Phos. Acid.
NEURASTHENIA—*Continued.*				
	.326	.496	1	1.52
110.	1.996	6.105	1	3.05
111.	.56	2.1	1	4.03
112.	.435	1.45	1	3.33
113.	.418	1.28	1	3.06
114.	.144	.75	1	5.2
Av.	0.11	1.612	1	2.6
NEURITIS.				
115.	.664	1.	1	1.5
OBESITY.				
116.	2.06	2.89	1	1.4
PARALYSIS.				
117.	.3	.36	1	1.19
118.	.786	1.62	1	2.06
119.	.95	1.52	1	1.6
Av.	.678	1.16	1	1.71
PYELITIS.				
120.	1.28	2.52	1	1.97
	1.38	2.52	1	1.82
	.8	2.4	1	3.
	.7	2.7	1	3.85
	.99	1.01	1	1.02
Av.	1.03	2.23	1	2.16
RENAL COLIC.				
121.	.757	2.15	1	2.84
122.	.73	2.85	1	3.52
Av.	.743	2.5	1	3.3
SEPTICEMIA.				
123.	1.77	.715	1	.42
SPLANCHNOPTOSIS.				
124.	.66	.64	1	.97
SPLENIC ANEMIA.				
125.	.854	.84	1	.98
	1.57	2.83	1	1.8
Av.	1.21	1.83	1	1.5
TUBERCULOSIS (PULMONARY).				
126.	.54	3.72	1	6.81
127.	2.16	2.47	1	1.14
128.	1.45	.41	1	.28
129.	1.165	2.290	1	1.97
Av.	1.328	2.223	1	1.67
Gen'l Av.	.91	1.98	1	2.1

the uric acid, so that we have an extreme range of the ratio from 1 to .28 up to 1 to 16.1, the former ratio occurring in the case of pulmonary tuberculosis with 1.45 gm. of uric acid and .41 gm. of phosphoric acid, the latter in a case of angina pectoris, in which there was .26 gm. of uric acid and 4.2 gm. of phosphoric acid.

Perhaps the most striking feature of the entire series of analyses is the utterly *bizarre* tendency constantly shown in the absolute and relative amounts excreted. Yet the final average comes well within the range of the accepted standards. One surprising and possibly suggestive fact is the very large amount of uric acid excreted in Bright's disease, the average being something over 1 gm., while the average quantity of phosphoric acid was less than 2 gm. The large quantity of purin bodies, of which the uric acid may be taken as an imperfect index, is in line with the views already expressed concerning the toxic character of many of these bodies and the present conception of some sort of primary intoxication as the most probable initial phenomenon of that disease.

Another thing requiring explanation is the uric acid output in diabetes. It is pretty uniformly agreed that the results obtained by the Hopkins method in diabetes are unreliable and that some constituent of the urine in diabetic patients gives the reactions of uric acid, which, instead of being very high, is really less or only slightly greater than the average. It probably would have been as well to have omitted them, but they are allowed to stand with this explanation for whatever they are worth, as the cases had all been numbered and tabulated and the computations made before the question was reached. I have not gone over the literature of this question and so do not know the ground of this conclusion, which seems to be uniform, but I am at a loss to understand why uric acid should be below the normal in a disease attended with a tremendous urea output, perhaps the largest of any disease, and in which the morbid activity of metabolic processes would be expected to produce rapid nuclein disintegration with the production of large quantities of purin bodies.

It may seem a little curious at first sight that a clinical study of the uric and phosphoric acid excretion in so considerable a number of cases should not include a single case designated as gout. It is in part accidental, as I did not ask for selection of any particular group or groups of cases, and in fact it is due to the fact that gout was usually a subordinate diagnosis in my case records. At any rate, it appears to me to be unimportant, as I am fully convinced that uric acid is only an incident in gout and that neither its formation nor excretion is in any sense a key to the disease.

DISCUSSION.

Prof. Graham Lusk, New York City, said it seemed to him that the purin base elimination has not been sufficiently investigated. It has been found by Dr. A. R. Mandel that the temperature in fever follows parallel with the elimination of these bases. This matter is being more fully investigated by Dr. Mandel.

LACTIC ACID IN METABOLISM.

WITH A NOTE ON THE CAUSE OF FATTY CHANGES IN THE ORGANISM.*

ARTHUR R. MANDEL, M.D.
AND
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The first researches on the subject of metabolism sought to determine the quantity of proteid, fat and carbohydrate destroyed by an organism in a given time and under definite conditions. Much has recently been accomplished toward an explanation of the intermediary steps involved in the destruction of the foodstuffs by the organism. Thus glycocoll, a product of proteid metabolism, may be united with benzoic acid in the organism and be eliminated in large quantity in the urine, but no similar method will cause the elimination of leucin, or of alanin, products of proteid destruction.

The present research concerns the subject of the position of lactic acid in general metabolism, and represents work accomplished at various times during two and a half years, involving feeding experiments on 24 dogs.

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Hoppe-Seyler believed that when dextrose was destroyed in the body it first broke up into two molecules of lactic acid. Neucki and Sieber[1] gave a diabetic patient 20 gms. of sodium lactate and found none of it in the urine. They concluded that the lactic acid was completely burned and that if the diabetic could acquire the power to split dextrose into lactic acid the further metabolism of the latter would be assured. They overlooked the fact of a small but definite rise in the output of dextrose in their diabetic patient, which to-day would be explained by assuming a synthesis of dextrose from the lactic acid ingested.

Embden and Salomon have endeavored to prove that dextrose may be synthesized from ingested lactic acid, by giving diabetic dogs sodium lactate. The dogs were depancreatized, but apparently not completely. In one case there was no sugar in the urine until after the administration of the lactate, and in another experiment the sugar output rose 10 gms. after administering large quantities of the lactate. These results are open to the criticism that the ingestion of sodium ions may increase the permeability of the kidney epithelium for dextrose (Fisher, Muderhill and Closson).

Some time before the publication of Embden's experiments mentioned above, we ourselves had given sodium lactate to a dog diabetic with phlorizin, and had found that 70 per cent. of the l-lactic acid given was convertible into dextrose, while the rest burned and reduced the proteid metabolism. In phlorizin diabetes there is little difficulty in establishing a definite ratio between nitrogen and sugar in the urine, which in fasting dogs approximates 3.65 gms. of dextrose to 1 gm. of nitrogen. Any dextrose present in excess of this ratio is "extra sugar" which must have some source other than proteid. In experiments with lactic acid ingestion, the "extra sugar" would represent the amount of sugar produced from lactic acid given.

The conversion of 70 per cent. of lactic acid into dextrose with a reduction in the proteid metabolism recalls the behavior of cane sugar in pancreas diabetes. Minkowski showed that the dextrose component was completely eliminated in the urine, while the levulose molecule was in part converted into dextrose and eliminated and in part burned, and reduced the proteid metabolism of the period.

We wished to find if a similar analogy existed for lactic acid, and therefore procured some d-lactic acid from Kahlbaum. This substance was not perfectly pure, but its subcutaneous ingestion in the form of a sodium salt resulted in one instance in its complete elimination as "extra sugar" in the urine of a diabetic dog. Its administration never resulted in a reduction in the amount of proteid destroyed. It appears, therefore, that d-lactic acid given to a phlorizinized dog may be completely converted into dextrose, while l-lactic acid may be in part so converted, and may in part burn within the organism. Just as dextrose is the sugar of the blood, so d-lactic acid is the acid found. The latter is present in all normal tissues and in increased quantities in arsenical and phosphorus poisoning.

The next question which arises is the possible production of lactic acid from dextrose in metabolism. Stoklasce has isolated a ferment from animal tissues which converts dextrose into lactic acid. The strict proof of this conversion is afforded by the experiments of Embden, who found that the percolation by blood of a liver rich in glycogen resulted in the accumulation of lactic acid in the blood. Also the percolation of a liver free from glycogen by a blood rich in sugar caused the formation of lactic acid, whereas the use of a blood poor in sugar had no such effect.

Claude Bernard saw that dextrose was convertible into glycogen and this again back into dextrose. It is evident that d-lactic acid may now be added to both ends of this chain forming the sequence: lactic acid, dextrose, glycogen, dextrose, lactic acid.

This is not the whole story, for lactic acid is known to be derived from proteid. Minkowski showed this when he extirpated the liver in birds and found ammonia and lactic acid replacing uric acid in the excreta, and in amounts proportional to the proteid metabolism. Also Asher and Jackson, after tying the arterial supply to the intestinal canal, spleen, pancreas, liver and kidney of a dog, noted an accumulation of lactic acid in the blood of the animal. The life of this dog was essentially carried on by the heart, which pumped blood through the muscles and lungs. Theoretically, lactic acid may arise from proteid through the hydrolysis of a substance like alanin, as is indicated in the following reaction:

$$\underset{\text{Alanin.}}{CH_3—CHNH_2—COOH} + H_2O = \underset{\text{Lactic acid.}}{CH_3—CHOH—COOH} + NH_3$$

von Noorden and Embden suggest the cleavage of leucin, a proteid decomposition product, into a radicle convertible into aceton and into alanin, which, as has been shown, is convertible into lactic acid. This cleavage of leucin is illustrated as follows:

$$\underset{\text{Radicle, convertible into aceton.}}{\begin{matrix}CH_3\\CH_3\end{matrix}>CH—CH_2—CHNH_2—COOH} > \underset{\text{Alanin radicle.}}{}$$

If alanin is convertible into lactic acid in the organism, it should also be convertible into sugar and, indeed, Neuberg and Langstein find that its ingestion increases the quantity of glycogen in the liver, and Amalagia and Embden show that it may bring about a large increase in the quantity of dextrose eliminated by a diabetic dog.

In phosphorus poisoning lactic acid accumulates in the tissues and blood of a fasting dog and appears in the urine. The urine is ammoniacal. Ray, McDermott and Lusk found on administration of phlorizin to such a dog that there was an elimination of dextrose in the urine which was in no way different from that excreted in uncomplicated phlorizin diabetes, and that the ammoniacal reaction disappeared. We have repeated these experiments and have analyzed the blood and urine for lactic acid as well as for nitrogen and dextrose.

It has been found that while lactic acid was present in normal blood, and in the blood and urine of dogs poisoned with phosphorus, it disappeared in all cases from both blood and urine when phlorizin diabetes was induced. Phosphorus poisoning will not cause lactic acid accumulation when dextrose is completely removed from the body, as in the case of phlorizin diabetes.

How is this to be explained? It seems to us that in phosphorus poisoning the lactic acid produced from proteid is synthesized in the organism (liver) into dextrose, and this dextrose when transported to the tissues is only partly burned, part of it reaching the lactic acid stage only, which lactic acid may return to the blood to be perhaps again reconverted into dextrose. It seems probable that phosphorus acts directly or indirectly to reduce the activity of the enzyme which normally breaks up the lactic acid derived from dextrose metabolism in the tissues.

1. Neucki and Sieber: Jour. f. prak. Chemie, 1882, vol. xxvi, p. 41.

It has recently been stated by a number of German writers (Jacoby, Waldvogel, Oswald) that phosphorus induces autolysis of the body's protoplasm. This is not true. If one administers phosphorus to a fasting dog, the proteid metabolism may be increased to 250 per cent. of that observed in starvation. If phlorizin diabetes be induced in a fasting dog this rise may extend to 500 per cent. This latter increase is due to the non-combustion of the carbohydrate derived from proteid. If now a phlorizinized dog be given phosphorus there may be absolutely no further rise in the nitrogen elimination in the urine. The mere administration of phosphorus, therefore, can not cause an uncontrolled activity of proteolytic enzymes in the organism. It is much easier to explain the rise in proteid metabolism in phosphorus poisoning as due to an incomplete combustion of lactic acid.

Another analogy in these two cases is the fatty infiltration found in the tissues both in phosphorus poisoning and in diabetes. The cause is similar in both cases. In diabetes, when the sugar does not burn in the cells, the "sugar-hungry" cells attract fat in greater quantity than they can burn it. The blood may become full of fat which is being transported. In phosphorus poisoning, there is a modified "sugar hunger" in that lactic acid, a primary cleavage product of dextrose, does not burn—hence the fatty infiltration. Whenever such conditions exist, fatty infiltration occurs. It has been found by Hoppe-Seyler and Araki that a diminished oxygen supply to the body results in the appearance of lactic acid, and in all such cases fatty changes occur. A local dimunition in the blood supply to a part of the heart, for example, will produce this condition with resultant fatty infiltration. In the lactic glands, where dextrose is probably converted into milk-sugar, which latter can not be burned in the organism, there are "sugar hungry" cells which attract fat from the blood. Even the fatty degeneration observed on autopsy in fever cases may be due only to dyspnea which precedes the fatal outcome. These views have been gradually developed in this laboratory, and are but an extension of Rosenfeld's discovery of a physiologic antagonism between glycogen and fat deposit in the liver.

CHRONIC CATARRHAL DEAFNESS.

NOTES ON SOME VERY SIMPLE EXPERIMENTS AS TO THE INFLUENCE OF SOUND WAVES ON OSSICULAR RIGIDITY.*

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That most cases of chronic catarrhal deafness are due largely to rigidity of the ossicles depending on morbid changes within the tympanum is an etiologic truism. The correction of this condition by some form of passive exercise—exercise that will move, not segments of the drum membrane, but the drum membrane and ossicles together—is not yet within our grasp. It is a fascinating possibility, a problem the solution of which would be of more value to humanity than could possibly result from the most brilliant development of otology along any other lines.

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METHODS USUALLY EMPLOYED.

I wish (1) to consider, briefly, the methods usually employed for exercising the drum membrane and ossicles, and (2) to speak of some very simple experiments as to the influence of sound waves on ossicular rigidity. Of the various measures employed, inflation and pneumatic massage are in most common use.

Inflation of the tympanum either by catheter or the Politzer method is of the greatest value in cases of tubal catarrh or obstruction as a means of replacing the drum membrane in its normal position and re-establishing the function of the tube. Beyond this, its value as a means of correcting ossicular rigidity is distinctly limited. I assume that this proposition will be accepted without argument.

Pneumatic massage is a term applied to passive movements of the drum membrane by means of any instrument producing alternate condensation and rarefaction of the air in the external auditory meatus. I have employed this measure in a considerable number of cases, using either Siegel's otoscope or a pneumatic pump connected with the electric motor. With either instrument I have invariably kept the drum membrane under direct inspection and endeavored in this way to guard against the employment of too great force. In some cases a considerable immediate gain in hearing has resulted from a first application of this procedure. This gain has rarely proved permanent, however, and progressive improvement has never resulted from repeated use of this form of massage. On the other hand, distinct loss has seemed to follow its routine practice in a considerable number of cases.

The unsatisfactory results of pneumatic massage are probably explained by two facts: 1. The movements of the membrana tympani are not those which Nature requires of it or which are necessary to the transmission of sound waves, and do not, therefore, exercise the drum membrane and ossicles in their normal function. 2. The undue strain to which the drum membrane is subjected tends to produce alterations in tension, reducing still further the patient's hearing power.

Pneumatic massage by the method under discussion seems to be based on the theory that whatever will move the ossicles will improve the hearing. Its practice does not seem to be governed by any rules based on scientific investigations, the method of its application to different cases being largely a matter of guess work. Should this statement be objected to, it may easily be disproved by any one who will throw light on the following questions: By what established rules is the relation between the degree of deafness and the number of vibrations employed to be determined? Should the length of the piston stroke vary in different cases? If so, by what method other than guess work are such variations to be regulated in accordance with the varying degrees of deafness or ossicular fixation? Recognizing the obvious fact that any loss of tension in the drum membrane will necessitate the employment of greater force, i. e., a longer piston stroke, in order to produce a given movement in the ossicular chain, how are such variations in tension to be determined and allowed for? Employing sufficient force to move the ossicles, how is undue relaxation of the drum membrane to be guarded against? These questions would seem idle except in so far as they may show weak points in a method of treatment from which much has been expected and which is still advocated by many distinguished aurists.

To be effective, I believe that exercise of the drum membrane should fulfill the following conditions, all of which are violated by the usual form of pneumatic massage: (*a*) The drum membrane should not be subjected to any strain likely to destroy its normal tension (i. e., to produce relaxation, stretching); (*b*) it should be made to execute movements similar to those excited in the healthy drum membrane by sound waves; (*c*) the number of vibrations per second should bear some relation to that note in the musical scale which marks the lower tone limit of the patient's hearing power.

With patients whose perception of musical tones reaches below C′ (256 double variations), there is strong clinical evidence that the ossicular chain may in some cases be thrown into more or less vigorous vibration down to, and below, their estimated lower tone limit by a system of tuning forks especially devised for this purpose. If impressions of sound reach the inner ear chiefly through vibrations of the conducting mechanism excited by sound waves from without, why may we not make use of selected sound waves to exercise the drum membrane and ossicles in just those movements (sounds) for which their mobility is shown to be impaired? In other words, if it be shown by careful testing with small tuning forks (e. g., the Hartmann set) that the hearing is impaired, but not lost, for a given note, e. g., C, 128 double vibrations, why is it not a rational procedure to exercise the drum membrane and ossicles for that particular note by means of a larger fork of the same pitch, whose greater amplitude of vibration is sufficient to throw the drum membrane into more vigorous motion? That this theory is not without practical bearing on the question of treatment in cases of deafness due to ossicular rigidity may in some cases be demonstrated by a very simple experiment. Supposing, for example, a patient who can but faintly hear the small Hartmann fork of 128 double vibrations (C), when set in maximum vibration, let the physician subject him to the following test: Taking a much larger unclamped fork of the same pitch, let him hold it while vibrating vigorously with the broad side of the prong as close as possible to the patient's ear without touching the auricle, keeping it there until its sound is no longer heard. Let him repeat this eight or ten times. Now let the ear rest a minute or two, and test again with the small Hartmann fork of 128 double vibrations, when it will be found in some cases that the sound is heard with greater distinctness and, therefore, during a longer period of time. While by no means invariable, this result occurred with sufficient frequency to induce me to make a series of experiments with forks of different pitch.

EXPERIMENTS AS TO THE INFLUENCE OF SOUND WAVES ON OSSICULAR RIGIDITY.

Tuning Forks.—The tuning forks employed in these experiments were especially designed for exercising the drum membrane and ossicles. For this purpose it was essential that each fork should be capable of the most vigorous vibration possible for its fundamental note. Roughly speaking, the amplitude of vibration increases with the length of the fork, or rather with the length of its prongs. And as a maximum amplitude of vibration was a chief desideratum, I ordered a set of unclamped forks, the prongs to be ¾ inch wide and as nearly as possible of uniform thickness; the variations in pitch to be regulated by gradations in the length of the prongs. After some failures, this order resulted in a set of forks with prongs of uniform width, producing all the notes of the musical scale from 32 double vibrations (C_{-3}) to 512 double vibrations (C^2), four octaves higher. They present a broad, flat surface which, when set in vigorous vibration, and held close to the external auditory meatus, can not fail to throw the drum membrane, even though thickened by disease, into more or less vigorous motion.

Routine of Experiments.—The hearing is first tested in much the usual way. The hearing distance for the acoumeter and for the conversational or whispered voice is ascertained. The lower tone limit is roughly estimated by means of the Hartmann set of tuning forks, and the upper tone limit by the Galton whistle. Increase or diminution of hearing by bone conduction is carefully noted. If the result of these tests points to a tympanic lesion, and the lower limit of the patient's hearing power is not above 256 double vibrations, a more exact estimate of the lower tone limit is made.

If, for example, the patient can hear the Hartmann C′ fork (256 double vibrations), but not the C fork (128 double vibrations), I next test the hearing with my forks representing the intermediate notes of this octave, i. e., 240, 213, 192, 170, 160 double vibrations, etc., until the correct lower tone limit is reached. In using these forks for testing purposes they should be struck with only moderate force and, overtones being carefully eliminated, held with the space between the prongs opposite the ear.

Supposing that the lower tone limit is by this test shown to be 160 double vibrations, this fork and four or five others immediately below it in the musical scale (i. e., 144, 128, 120, 107 double vibrations, etc.) may be employed for the purpose of throwing the drum membrane and ossicles into forcible vibrations. Using first the highest fork, 160 double vibrations, it is set in maximum variation and held with the flat surface of the prong close to the ear until its sound is no longer heard. This should be repeated 8 or 10 times. Then the next lower fork, 144 double vibrations, is employed in the same manner, and so on through the series of successively lower forks, 128, 120, 107 double vibrations, etc., until one is reached which can not be heard even in maximum vibration. Used in this way, tones four to six notes lower in the musical scale will be perceived. As each successively lower fork is heard during a shorter period of time, it is well to repeat the initial stroke somewhat oftener as we descend in the musical scale, the lowest fork being heard but a few seconds. Letting the ear now rest for one or two minutes, it will be found in some cases that an appreciable gain in hearing has resulted.

VALUE OF EXPERIMENTS.

I wish to avoid the error of exaggeration in speaking of the value of these experiments. The results have varied greatly in different cases, some cases of fairly marked deafness responding favorably, while others of slight impairment have shown little or no improvement. Such contradictory results have occurred in cases apparently equally favorable for this experiment. They apparently depend on differences in the character of the lesion, rather than its stage or duration. In those cases in which the experiment has resulted favorably, the improvement has been in the direction of improved audition for the lower musical tones and increased hearing distance for the watch or acoumeter. The improvement in certain cases has been marked, the hearing distance for the acoumeter being more than doubled and the range of tone perception being considerably extended.

The method is cumbersome, and its application neces-

sitates an expenditure of time rendering it unavailable as a routine measure by men in large practice. Nor have the results thus far demonstrated a sufficiently definite value in excess of what may be accomplished by other means to justify one in proclaiming this measure as a valuable addition to our therapeutic armamentarium.

All that I claim for these experiments is that they furnish additional proof that in certain cases of chronic deafness the mobility of the ossicles may be increased and the hearing thereby improved by sound waves rationally employed. They also suggest a field of experimental work through which in time we may arrive at a system of auditory massage which will yield more valuable and permanent results.

I believe that some form of effective auditory massage is a possibility; but that its development must be along rational lines, i. e., in accordance both with the physics of sound and the physiology of the sound-conducting mechanism. In this direction lies the greatest need in the development of practical otology.

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DISCUSSION.

DR. C. J. BLAKE, Boston, said that it is evident that the application of the grosser forms of massage, for the purpose of mobilization of the sound-transmitting apparatus of the ear, should be supplemented by a more delicately applicable method of mobilization. Dr. Blake assisted Professor Politzer in a series of experiments as to the effect on the hearing, in cases of chronic non-suppurative middle ear disease, of tuning forks of low pitch electrically actuated. These experiments showed apparently an improvement in hearing in cases of rigidity of the articulation of the ossicles. The fact that the tuning forks were electrically actuated and therefore presented a continuous tone led, he thinks, to their application for a longer period than would otherwise have been the case, that is to say, than if they had been actuated by striking and allowed gradually to come to rest. One of the results of these experiments was the development in many of the cases of auditory fatigue, and it was found that the exposure of the ear to the tone of a low pitch tuning fork continued for a period, say of three or four minutes, resulted in the appreciation on the part of the patient, when the tuning fork was brought to rest or removed from the ear, of another sound, a false sound, which was a complimentary tone, and many patients, after subjection of a few minutes to the tuning fork sound, heard, when that sound ceased, the third or fifth of the tone used for periods of from a few seconds to half a minute or more. Under these circumstances the experiments were not continued, the ground taken being that the ultimate expenditure of force, of these deep tones of considerable volume being in the labyrinth, there was a possibility of injury from the fatigue caused. In the experiments which Dr. Kerrison reported, however, there is a means of applying massage, phono-massage, for limited periods of time, and it is distinctly understandable that there is an efficient means for purposes of mobilization. When the limit of sound transmission of the sound-transmitting apparatus, ranging from the lowest sound appreciable, 60 vibrations in a second, up to about 40,000 vibrations in a second, is considered, it is evident that the use of tones of low pitch will be most serviceable in effecting mobilization of the articulation of the ossicles. Aside from the immediate therapeutic value of the treatment, it is sure to lead up to better information concerning the transmission, through the sound-transmitting apparatus, of tones of low pitch, and it is inevitable that the following out of a series of such investigations as are indicated in the paper, will help much in determining, more specifically than has yet been done, the value of tones of low pitch in the differential diagnosis of disturbance of sound transmission.

DR. LOUIS J. LAUTENBACH, Philadelphia, said that musical tones thrown into the ear can exercise little or no influence on the attachments or articulations of the ossicles but influence rather the nerve endings. Physics teaches this. Tuning forks give not massage, but stimulation, often an overstimulation of the nerve. Clinical work in this line carried out for any length of time will prove this. Dr. Lautenbach has found that primary stimulation by tones of high pitch produces the greatest effect on the hearing, but that if long continued it is followed by great and sometimes permanent depression. He has found that low tones do stimulate the hearing, but it takes a long time and is not followed by so great depression. He said that he can not recall any permanent bad effect resulting from low tone stimulation. He considers the condition resulting in these cases as due primarily to the effect on the nerve structures of the ears and not at all to any effect on the structures of the middle ear. If it be desired to affect the middle ear structures, they must be dealt with by ordinary mechanical means. The function of the ossicle is to transmit sound. In part, it is known how sound is transmitted, but in reality very little is known about it. The chain of bones can be thrown into any desired position and will carry the tone if the articulations are perfect. In most of Dr. Lautenbach's experiments he has used the syren; with it any number of vibrations can be obtained and kept up for as long as desired. Quick results can be obtained, and it can be readily determined how much can be gained by tones of varying pitch. He thinks that the use of electrically operated tuning forks is valuable. Anything too continuous in the way of sound is followed by bad effects on the ear. Pneumo-massage has a distinct and positive purpose and effect; by this means good effects can be produced and bad effects if it is overdone. Physicians as well as patients are prone to want to overdo it. To get the maximum effect in vibratory massage, vibrations are needed, varying from 250 a second to 5,000 or 10,000 a second, depending on the case. In pneumo-massage the best possible results are obtained by impulses varying from 50 to 400 a minute.

DR. CULLEN F. WELTY, San Francisco, said that tuning forks will differentiate the different forms of deafness almost to a certainty, but when the tuning fork is used as a treatment for otosclerosis (ossicular rigidity), he is almost confident that it will not yield practical results. It is questionable to him if otosclerosis (pure) should have mechanical treatment at all. He is confident that some forms should not. In adhesive processes (ossicular rigidity) practical results can not be obtained by the vibrations given the drum membrane by the tuning fork. More can be accomplished by the catheter. This, however, can be abused.

DR. PHILIP D. KERRISON, New York, said that it seemed evident that some of the speakers misunderstood him. He stated distinctly in advance, he said, that he did not propose the use of forks as a valuable therapeutic measure. He also stated in the course of the paper that whatever practical value these experiments might have would be in possibly suggesting certain methods of pneumatic massage, by which more valuable and permanent results might be obtained. He said that Dr. Lautenbach's statement regarding the number of vibrations was accompanied by no explanation of his reasons for this belief. If any definitely good results are to be obtained, reasons for the technic used should be given. One of the most obvious dangers of pneumatic massage, as usually employed, is readily appreciated, he said, if we remember that Helmholtz proved by experiments that the maximum movements of the umbo are 0.25 mm. By the usual method of auditory massage, the drum membrane or segments of it, are made to execute movements much greater than this; and it is difficult to conceive how such exaggerated excursions can fail to result either in lesions of the ossicular joints or in undue stretching or relaxation of the drum membrane.

Management of Diabetics.—Hershey, in the *Denver Medical Times*, states that no diabetic should be considered as being under proper treatment until his case has been thoroughly studied for at least a month, either under strict hospital supervision or at home under the care of an intelligent trained nurse. Thus we are able to study the effect of exercise during restricted diet, the effect of rest under the same régime, and the effect of the ingestion of carbohydrates during rest and during exercise.

OTOLOGY IN ITS RELATION TO RHINOLOGY AND LARYNGOLOGY.*

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The history of otology is that of the cumulatively accretive study of an organ of special sense having for its purpose the appreciation of two distinct modes of motion and, additionally, tactile functions in relation to the sensorium and reflexly in relation to other organs, which constitute it one of the most important watch towers of the human citadel.

Early in the investigations into the structure of the human body, the organ of hearing was a favorite resource of the anatomist. To it he turned as to a labyrinth of suggestions and the delicacy of adjustment of the mechanism of its sound transmitting apparatus was an interesting microcosm of the larger joints and more gross muscular adjustments of the trunk and limbs which he had already explored.

Judged by their printed records the human ear was a veritable attraction to the older anatomists and the accuracy with which its intricacies are described is equaled only by the vagueness of the conceptions as to the manner in which it performed its functions, and the attractiveness of its study would seem to have had its foundation both in the demonstrably consecutive arrangement of its delicately constructed parts, and in the mystery attending the question of their related uses. Much of this mystery still remains uncleared, new questions still arise as to the methods of intratympanic and cranial sound transmission, the physical question of the translation of sound waves, through fluids of different densities, in enclosed cavities, is still unsolved and the later demonstrations of the diffusion of the blood supply within the labyrinth are helping to explain the sequence of morbid conditions not heretofore understood.

SCOPE OF OTOLOGY.

Otology still presents a broad and alluring field for original research and clinical investigation. The slowly progressive changes in the middle ear, gradually inhibiting its function of sound transmission, the reflex relationships between the middle ear and labyrinth and other organs, the bearing which the general systemic condition has on the blood supply and the transmission and perceptive functions of this complex organ, the elucidative information which may be obtained from it in eliminative diagnosis, emphasizing the statement that the ear is a small window through which it is possible to get a broad view if one only gets close enough to it, all point to otology as a distinctive department of laboratory and clinical research sufficient in itself to command the study of a lifetime, and scientifically remunerative, both in itself and in its centralizing relationship to other branches of investigation.

OTOLOGY AND RHINOLOGY.

Viewed from the scientific standpoint alone the relationship of otology to rhinology is mainly that which concerns the middle ear and has to do with questions of blood supply, of variations in intratympanic atmospheric pressure and in the consideration of the nasopharynx as a reservoir of possibly, mechanically invasive microorganisms. In the early days of clinical otology the regions of the posterior nares and of the nasopharynx were practically unknown, or disregarded, fields. The part played by micro-organisms in the causation of diseases, surgically remediable, was yet to be discovered, the importance of the integrity of the nose and nasopharynx to the proper aëration of the tympanic cavity was unappreciated, and cases of persistent aural symptoms, dependent on the presence of obstructive growths in the naso-pharynx, sufficient to produce also the now well known facial symptoms, passed by on the streets and through the out-patient departments of the hospitals unnoticed.

Catlin, that intimate observer of the native American, whose gallery of portraits of Indian braves is one of the choice possessions of the Smithsonian Institution, marked the difference between the facial expressions of the Indians and the Caucasians and, in his trenchant book under the title "Keep Your Mouth Shut," not only limned the contrasts with his pencil but, with his pen, drew stringent inferential comparisons between the two races, the possessor and the invader of the native American soil, as to their inherent moral qualities, but with no thought of a physical cause. It was not until, almost simultaneously, Meyer in Copenhagen, Löwenberg in Paris, and Franklin Hooper and the writer, in this country, drew attention to the clinical bearing on respiration and aural function of the presence of the so-called adenoids, that an important practical binding step between otology and rhinology was established. This step led naturally to more intimate study and more reasonable regard of the boundaries within which these two departments could harmonize their efforts, a boundary line within which there is still large opportunity for both distinctive and collaborative research.

In following the history of any special branch of medical research and practice, it is necessary to recognise the fact that the story runs in two lines of distinct differentiation: the history of the specialty in the line of research shows it to be definite and consecutive, while the history of practice is marked by the variations incident to time and place and the limitations of fiduciary considerations. As a line of research otology has always had, and still presents, within itself, sufficient reason for its independent maintenance and for its representation as a department of education in our medical schools, but in the matter of practice its association with cognate specialties is influenced by considerations outside of the limits of true specialization.

A distinct line of research from its beginning, otology, bearing a definite relationship to general medicine but implying particular aptitude and entailing particular training and being, in its practical application, a limited field, fell into relationship first with another special branch of medicine and surgery requiring particular training for its study and tactile gifts for its application, and the practice of otology became linked with the practice of ophthalmology on a purely sumptuary basis without physiologic ground for the relationship.

OTOLOGY AND OPHTHALMOLOGY.

Ophthalmologic practice had already become well established when otology entered the practicing field and it was but natural that the younger of the two earliest specialties in medicine should come to be regarded as an addendum to the elder, especially as both require the same class of special training and much the same kind of individual aptitude in their practitioners.

Consequently, in the second stage of its special de-

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velopment we find ophthalmology and otology associated both in practice and in teaching and the dissociation is of so recent a date as to be still in progress. Up to thirty-five years ago the appointment of an ophthalmic surgeon to the Massachusetts Charitable Eye and Ear Infirmary carried with it the obligation to receive, and to treat, such cases of disease of the ear as might present themselves in the course of the service and it was not until 1870 that in the distinctive post of aural surgeon was established a step in advance, which was shortly coupled with another, the formal recognition, on the part of the board of managers, of medical teaching as one of the vital functions of an institution for the dispensation of medical charity, and it is only within a year that the joint chair of ophthalmology and otology in one of our larger schools, the University of Michigan, has been divided, and two separate professorships established.

CONCLUSION.

The relationship between otology and laryngology has as little a physiologic foundation as that above mentioned, but between otology and rhinology there is both a physiologic and a practical basis for collaboration, which is however especially concerned with that portion of the organ of hearing devoted to sound transmission and finds its own limitation of relationship in this respect. The service rendered to otology by the later advances in rhinology while computable as great, still remains to be definitely determined, because the end has not yet been reached, and is to be attained only by carefully compared coöperative observation, and it is the necessity for this which makes the true relationship of these specialties. To attain the best results it is important that the two should not be too much merged, since each offers a broad field for study, in its particular region, which it is advisable to conserve, and each has individual points of departure along lines of its own association. To study rhinology from the otologic standpoint alone is greatly to circumscribe rhinology, while to study otology from the rhinologic standpoint only is to leave out of consideration much that is of importance to an organ of special sense which has varied relationships with the functions of other organs and with the well being of the human economy as a whole.

The association of otology with ophthalmology was one of economic origin and without scientific reason, the association with laryngology has always been one of uncertain tenure, and it is the association with rhinology alone that has any substantial ground for persistence, and that to a limited extent, for, inevitably, as rhinology grows, and there could be no better evidence of growth than the number of valuable contributions, both in original research and in clinical observation which mark the program of this and of similar meetings, it will become more and more a distinctive field, capable of commanding the individual devotion of the scientific investigator and earnest practitioners, as otology has done from its beginning.

DISCUSSION.

DR. R. G. SHAMBAUGH, Chicago, said that the very intimate relations which exist between what have sometimes been considered two separate specialties—rhinology and otology—can not be too often or too forcibly emphasized. He thinks that otologists are willing to admit that the most important chapter in recent years, aside from aural surgery, has been added to our knowledge of otology through the study of rhinology.

He fears that some as yet have a very poor appreciation of just what this relationship between rhinology and otology means, and so long as the subject is still of a more or less indefinite nature, some perhaps are inclined to think that relationships are seen which do not exist. Every rhinologist has had the experience of examining patients who had previously consulted other physicians who had advised operations on the nose, perhaps on the throat, when there was no reason whatever for operative interference. It seems to be not an uncommon thing to advise a patient suffering from chronic catarrh of the middle ear to have any little anatomic variation in the nasal chamber such, for example, as a small crest on the septum, removed for the purpose of benefiting the ear. All sorts of impossible imaginary relations are believed by some to exist between nose and ear trouble. Important relations do exist between middle-ear disease and conditions in the nose and throat, but it does not follow that every case of chronic middle-ear catarrh requires an operation on the nose or throat. The most important relation between the nose and throat and ear trouble is that found when the pharyngeal tonsil is enlarged. Most of the patients in middle life who present themselves for treatment of chronic middle-ear catarrh could have been greatly benefited had the proper attention been given to the adenoids in early life. When these patients are seen in middle life, however, the period when the ear disease is being influenced by the condition in the nose or throat has usually long since passed, and the only interference in the nose or throat that is justifiable is such as may be indicated to relieve local trouble in these parts and no effect on the ear trouble from such treatment can be expected.

DR. OTTO T. FREER, Chicago, referred to Dr. Blake's statement concerning the number of specialties which may be associated by a man wishing to keep his work up to the highest standard of excellence and progress. He agreed with Dr. Blake that this number is diminishing and will in time be limited to one. Twenty years ago the eye, ear, nose and throat physician could keep up his knowledge, technic and instrumentarium, in all his fields. It is impossible for him to do so to-day, when each branch includes a literature so vast and manipulations so difficult that only constant diligence makes it possible to keep up with progress. Inevitably, therefore, the man who assumes so many specialties will slight one or more of them. In this way many eye, ear, nose and throat specialists are to-day making the noble sciences of laryngology and rhinology mere appendages to eye and ear work, timidly and ineffectively entering into the treatment of the diseases of the nose and throat. While in smaller towns it will always be necessary to practice several specialties, in a few years he who does so in the larger cities will be looked on as representing a commercial rather than a scientific class of workers.

MULTIPLE NEUROMATA OF THE SKIN.*

WILLIAM EDGAR DARNALL, A.M., M.D.
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This subject is one that is noticed in very few textbooks of medicine and very scant attention is given to it in those that do refer to it. From the quotations given below it may be seen that the affection is not common, even in the broadest application of the term. I have collected three cases, reported herewith.

This form of tumor presents itself in the form of multiple hard spindle-shaped masses, varying in size from that of a small pea to that of a walnut, and distributed along the course of a single nerve, or of all the nerves of an extremity, or even the whole body. It originates from the connective tissue of the nerve sheaths and usually contains within its substance a certain number of nerve fibers included by the tumor in the course of its development.

"Painful neuroma of the skin is an exceedingly rare form of the affection, only two cases in which the skin was primarily

* Read in the Section on Diseases of Children of the American Medical Association at the Fifty-seventh Annual Session, June, 1906.

affected being on record. Duhring's case[1] was the first noted and was followed by a report of a case by Kosinski.[2] Both cases occurred in men aged seventy and thirty, respectively. In Duhring's case the tumor had been developing for ten years and in Kosinski's for fourteen. The tumors, varying in size from a pin head to a filbert, confluent and disseminated, were thickly studded over the areas affected. In the first case they extended from the scapula over the shoulder, down the arm to the elbow, occupying principally the area of distribution of the circumflex nerve; and in the second case, over the buttocks and upper part of the thigh corresponding to the area supplied by the small sciatic nerve and the external cutaneous. The lesions were arranged irregularly, not corresponding exactly to the course of the nerves mentioned, and formed firm, flat or elastic nodules oval in shape, fixed in and extending below the skin, and movable only with it. The integument between the nodules was normal, the nodules being purplish or pink in color. In Duhring's case the skin over the nodule was slightly scaly. At the outset pain was variable but later it became excruciating and occurred in paroxysms lasting an hour or more. Since they are non-malignant these growths are best not interfered with unless great distress is caused by the pain. In both of the cases referred to above resort was had to the removal of a portion of the nerve supply with resulting quick relief from pain and a gradual subsidence of the nodules. The new growth is composed of firm connective tissue and non-medullated nerve fibers."[3]

"The multiple neuromata in some cases number thousands and vary in size from small peas to masses as large as the fist. They are located in three general ways: 1. They may appear along a single nerve, or along several nerve trunks at somewhat regular intervals like beads. 2. They may appear only on a single nerve or its branches. 3. They may invade nearly every nerve in the body, including the sympathetic. In the subcutaneous situations they appear like vascular cirsoid dilations, but present a different consistency and anatomic position, and are not modified by pressure on venous or arterial channels. They are most frequently acellular and devoid of myelin. While they may be sensitive and attended by neuralgic pains they are usually unmarked by any sensory disturbance. These cases are sometimes of an hereditary nature."[4]

"The tumor takes its origin either from the endoneurium of a peripheral nerve, pushing aside the nerve fibers until they become widely separated, and even perish from pressure or disappear; or from the perineurium or epineurium, growing laterally from the original nerve trunk, sometimes surrounding it without disrupting the natural arrangement of the nerve fibers. It is, therefore, clear why a histologic study of the neurofibromas, as found in the skin and along the course of peripheral nerves should show gradations relative to the nerve fibers, which are sometimes abundant, again isolated or even absent, and why the fibers vary from apparently normal medullated fibers to naked axis cylinders, or axis cylinders variously formed."[5]

"The term neuroma has been loosely applied to all new growths containing nerve fibers or nerve cells in a fibromatous matrix. Strictly speaking, a neuroma is a tumor composed of newly proliferated proper nerve elements, either neurons or neuraxons, or both. It now appears that certain recently studied neoplasms can be included under this head, e. g., the multiple dermal neuromas found by Knauss in children. They contain both branching ganglion cells resembling those of the sympathetic ganglia, and numerous medullated and non-medullated fibers showing no anatomic connection with the nerves in the neighborhood, and apparently only to be explained on the basis of a proliferation of original nervous elements."[6]

"Neuroma of the skin is an exceedingly rare disease and even in the broadest application of the term it is not common. According to Duhring the subcutaneous nodule of Wood, resembling neuroma closely, differs in being situated in the subcutaneous tissues, is always freely movable under the skin and is solitary. This and other cases of subcutaneous neuromas of the skin are not, strictly speaking, cutaneous growths, although they are usually so considered in the descriptions of the disease. Nor is Rump's case, sometimes quoted, a clear example of the malady. It consisted essentially of a fibroid tumor of the nerve, and was not accompanied by pain. Histologically, true neuroma of the skin is found seated in the corium extending into the deeper structures. On examination it is found to be made up of firm connective tissues containing non-medullated fibers running up as high as the papillary layer of the corium. They are in reality fibroneuromata."[7]

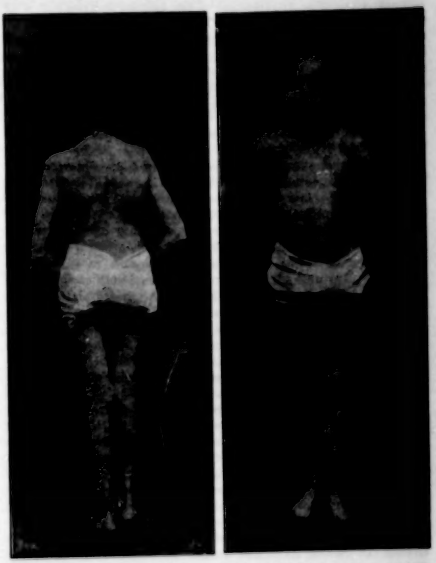
1. Am. Jour. Med. Sciences, October, 1873.
2. Centrbl. f. Chir., No. 16, 1874.
3. "Reference Handbook of the Medical Sciences," p. 259.
4. "Nervous and Mental Diseases," Church and Peterson, p. 279.
5. "American Text-Book of Pathology," p. 175.
6. Ibid., p. 194.

CASE REPORTS.

The following case occurred in my practice:

CASE I.—H. B. M., aged 19.

History.—Patient works at clerical work in an office. He has always been a rather delicate boy and unable to do hard work or engage in rough play like other boys. He has no bad



habits and no venereal history, does not use tobacco or alcohol. Development is poor, as may be seen from the accompanying pictures and his general appearance would indicate a rachitic history. Although 19 years of age he shows no signs of puberty, penis is undeveloped and in size corresponds to the penis of the average ten or twelve-year-old boy. He has no pubic or axillary hair. Some eight years ago his mother noticed that his back was not straight and since then he has developed a pronounced curvature of the spine (scoliosis) in the mid-dorsal region. He is somewhat anemic.

Mentally he is bright and intelligent. He has had no previous illnesses.

About six years ago a tumor about the size of an egg was removed from over his left eye, the nature of which was not recognized at the time.

Three years ago or more he noticed the enlargements here shown but as they gave him no discomfort he paid no especial attention to them. Sometimes he feels a numbness in certain parts of his body affected by the tumors. Pressure on the tumors causes pain which radiates up and down the course of the nerve. He has full use of his arms and legs. He com-

7. "Diseases of the Skin," Stelwagon, pp. 663-664.

plains of pain in the precordial region and over the sternum, as well as a certain amount of dyspnea at times, all of which can be attributed to the deformity of his chest by reason of the curvature of the spine, and the consequent pressure thus exerted on his lungs and heart. His abdomen is protuberant. The functions of his bowels and bladder are normal and his appetite and digestion good.

Examination.—The movements of the facial muscles are normal. He closes the eyelids firmly, masseters contract firmly, tongue protruded straight and is not atrophied nor does it show fibrillary tremors; extraocular muscles are normal as are also his sensations of touch and pain in the face and over the trunk and extremities.

Movements of his limbs, upper and lower, are not impaired, there is no local atrophy, though he is generally thin and rather wasted. His hand grasp is normal, as are also the Argyll-Robertson reflex, the patellar reflex, and ankle clonus. Babinski reflex is present. His gait is the gait usually seen in sufferers from a curvature of the spine, but shows no other peculiarities. The distribution of the tumors is generally over the scalp, the shoulders and the back, the pectoral regions, and around the loins, as well as up and down the arms, in bead-like chains corresponding nearly to the course of the nerves supplying the various parts. They are elongated pea-like bodies freely movable under the skin rather than attached to it, and vary in size from the porcelain head of a shawl pin to the size of the end of one's thumb. There is no pain associated with them unless they are firmly grasped between the fingers.

Pathologic Examination.—Two of these tumors were excised under cocain anesthesia and submitted for a pathologic examination to Dr. Harry A. Duncan, pathologist to the Samaritan Hospital, Philadelphia. He reports:

"Macroscopically, the tumors are smoothly ovoid in shape, the size of a bean, uniformly firm, whitish gray in color and surface smooth. The smooth surface appears to be a white glistening capsule loosely adherent. To one side of the tumor examined is attached a bit of the external sheath of the nerve.

"Microscopically, the capsule consists of fibrous and loose areolar tissue, and in places is characterized by leucocytic invasion pointing to inflammatory changes. The epineurium or general nerve sheath shows a loose areolar tissue. Clumps of fat cells are numerous. Between the fat cells an infiltration suggests inflammatory changes. The tumor substance is made up of wavy fibrous tissue, although areas of it are undoubtedly myxomatous. Some nerve tissue is present. Cross sections show a separation of the nerve from the perineurium, probably due to inflammatory exudate. The perineurium has undergone a fibrous proliferation. Changes of a similar nature are progressing in the endoneurium and causing a separation or dissociation of the individual nerve fibers from one another. A transverse section of a nerve shows such decided fibrous change in the endoneurium that almost all signs of true nerve tissue are destroyed. The tumor is undoubtedly a neurofibroma, and is doubtless only the localized evidence of a diffused fibromatosis along the nerves."

I am also indebted to Dr. Duncan for the notes of the following case:

Case 2.—H. C., aged 22, clothing cutter by trade, German by birth.

History.—Family history negative except that one sister suffered from similar growths. The patient had measles when a child, no other diseases, and no bad habits. No venereal history. The tumors are shown all over the body, following the course of the nerves, and were first noticed on his arm when he was 10 years old. For a time their growth was slow, but recently it has been very rapid. The tumors are hard and fusiform in shape, and freely movable under the skin.

Operations.—One tumor was opened at St. Joseph's Hospital before the patient came under observation by me, but was not removed on account of its size. Following this operation he was affected with foot drop. His pulse was 96 to 118, temperature 99 F. Respirations 20 to 24. Urine normal. Blood showed moderate anemia. Many of the tumors were removed. They varied in size from a peanut to a goose-egg. General health improved and he left the hospital. The growths continued to increase in size and I next learned of his presence in the Philadelphia Hospital. At this institution, because of a very large and painful sarcoma in the course of the sciatic nerve, a hip joint amputation was considered, but before any radical treatment was instituted he died from general exhaustion.

This patient also had a sister, aged 23 years, a tailoress, who had all over her body small elongated tumors of a similar nature, along the course of the nerves. They appeared when she was about 16 years old. Several of them had been removed. In both her case and her brother's microscopic examinations were made and the tumors were found to be neurofibromata. One tumor in the brother showed on examination a distinct tendency to sarcomatous change.

A case has been reported by Bland-Sutton, and Thompson,[3] of Edinburg, refers to some interesting complications in his monograph on the subject. In reporting Keen's case Spiller has searched the literature and sifted it well, and has written a good report, though it is not all pathologic. Every article lays stress on the hereditary tendency of the malady, the painlessness of the tumors, and the long period of development, except when associated with sarcoma. Thompson thinks surgical interference often causes sarcomatous changes to set in.

Through the courtesy of Dr. William G. Spiller of Philadelphia I add the following case, the notes of which he has kindly sent me:

Case 3.—W. R., aged 33, was admitted to the University Hospital May 12, 1905.

Special History and Habits.—Patient is a farmer and lumberman. Work is very heavy and hard; has not been able to work for about six months; uses alcohol to moderation, never to excess; tobacco, rather freely. Denies venereal history.

Family History.—Father, mother, three brothers and four sisters living and well. Patient is the oldest of the family. One brother dead-born. Has wife and two children, one 3 years old, one 14 months old, and in good health.

History of Previous Illness.—Had ordinary diseases of childhood. Six years ago had one tumor the size of a hazelnut removed from inner surface of left elbow; one from right axilla, one from outer surface of left leg about midway between knee and ankle, one just below internal malleolus of left leg, one just below external malleolus of right foot. The one on the left elbow had appeared about five years before removal, the others two to three years before removal. They were increasing very slowly in size and were very tender to touch or to any unusual strain put on the part. There was usually some spontaneous pain after he had retired at night. Following the operation for removal of these tumors patient had a mild ether pneumonia from which he recovered without complication. He was otherwise in good health to about a year ago, when present trouble began.

History Present Illness.—About eleven months ago patient began to have a feeling of mild pain and numbness in his hands, especially in the morning. This usually improved after he had worked a little. There was no weakness in the hands at this time. The pain and numbness increased in severity and extended up the arm and seemed to affect especially the thumbs and middle line of the arms. The right hand and arm have been more affected than the left hand and arm from the first. In June, 1904, he consulted a physician and was treated for rheumatism, without relief. In September of the same year his hand had become so weak that he had to give up most of his work.

During all of this time, that is, from the beginning of his trouble, he has had a feeling of constriction about his body from the axilla to the crest of the pelvis, more marked on the right side, and seeming to come on in attacks. At times he would seem to be free from this feeling entirely. About five months ago, in December, 1904, he noticed that his legs were

3. "Neuroma and Neurofibroma," Alexis Thompson.

becoming weak and he began to have pain in his toes and from the knees to the hips. This pain he describes as a "dead" or "numb pain." This was more noticeable on the right side. About this time the right hand and arm had become so weak that he was unable to use them at all. For the past four months the weakness in all his limbs has increased and the pain has become more severe, being confined largely to the extremities and being worse at night. He has been losing weight, and for about the last six months has had some difficulty in starting his water.

Examination.—Movements of the facial muscles normal; closes eyelids firmly, wrinkles forehead; shows teeth well, masseters contract firmly, tongue protruded straight, not atrophied, no fibrillary tumors. Extra-ocular muscles normal. Sensations for touch and pain in the face normal.

Upper Limbs: Movements much impaired; resistance to passive movement weak; no local atrophy anywhere, though the man is generally wasted and probably more so in the forearms than in the upper arms. Grasp of each hand is very feeble. Biceps tendon reflex, triceps tendon reflex very prompt on each side. Sensations for touch and pain are preserved in each upper limb, even in the hands, but these sensations are not so sharp as in the face. A small tumor is found in front of the left elbow about the size of a hazelnut, and is painful to touch. Right upper limb is weaker than the left.

Lower Limbs: Voluntary movement and resistance to passive movements weak in lower limbs. Sensations for touch and pain are preserved in the lower limbs, but are probably more impaired in the right lower limb than they are in the face. Patellar reflex is much exaggerated on each side. Ankle clonus present on each side, more distinct on the right. Babinski reflex is distinct and typical on each side. Sensations to touch and pain may be a little more acute in the left limb.

There is no deformity of the vertebral column. No tenderness to pressure along the spinal column. Patient can not feed nor dress himself. Cremaster reflex is present, but feeble on each side. He sways a little with eyes closed. Gait is somewhat staggering and he drags the right toes on the floor like in a hemiplegia. In walking, the right upper limb is hanging slightly flexed at the elbow. A small tumor is seen between the first and second toe on the right foot, not painful to the touch. Later other small painful tumors were found in the limbs.

Diagnosis.—Neurofibromatosis, probably with pressure on the cord by tumor of the nerve roots.

TYPES OF CONGENITAL SYMBOL AMBLYOPIA.*

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NEW YORK.

W. Pringle Morgan,[1] of Seaford, Sussex, England, was the first to point out that, in addition to the word-blindness which is the result of acquired cerebral lesion, there is a word-blindness congenital in nature which he has suggested is due to defective development of the word memory centers of the cerebral cortex.

This communication was followed by those of Hinshelwood[2] and Nettleship,[3] Wernicke,[4] of Buenos Ayres, and others[5] the experience of all who have observed and studied these cases simply justifies the initial and simple conclusions of Morgan. The first American observer who has recorded any observations on this subject is A. Schapringer, of New York, who read a paper on the subject before the Section of Ophthalmology of the New York Academy of Medicine, Feb. 19, 1906. His paper on that occasion was followed by one by myself in which I referred to two cases. That paper is the basis of this one.

It was my purpose to present an extended study of two boys whom I have recently seen and who have shown themselves so backward in learning to read that at the first blush it excited in my mind a suspicion of congenital word-blindness, owing to the shyness of both of them, I have not been able to study their cases as carefully as I wish, and am compelled to present my views after a more or less imperfect investigation. I do not doubt, however, that in these two boys there is a congenital deficiency, or at least a tardy development of the word-memory centers; and the class of cases to which they belong is to be clearly and definitely differentiated from those cases of word-blindness which occur in cerebral degeneration, intracranial tumors or lesions and injuries. Congenital word-blindness appears to me to be a department of pediatrics and neurology which has not received the attention it deserves.

Case 1.—A boy, aged 10, was sent by his teacher to my clinic at the New Amsterdam Eye and Ear Hospital on account of an injury to his left eye. In my opinion, the injury has no bearings on the symptoms which I have observed, and it is sufficient to say that he received a blow from a small shot that was thrown or fired at him by a comrade. He said the shot lodged under his upper lid and fell out on examination of it by his sister.

Examination.—He has a vitreous opacity, a ruptured iris, and greatly diminished vision in his injured eye. It was, however, fairly free from irritation.

While examining him I was struck by his slowness and peculiarity, and asked his mother what his status at school was. She said he had never yet been able to learn how to read, but could write a few simple words. I tested him on his alphabet. At times he named some letters correctly, and later on failed to name the same ones correctly. I then asked him to make several letters of the alphabet, when he made repeated errors. When asked to write capital K he wrote capital T; for capital T he wrote little t, and he could not write u at all. Although he had written a K for a T, when asked to write K he could not make it, but when asked to write his name he did so with readiness. His name is James Kennedy and he did not halt at the K. I believe his name was written automatically. The letter E seemed to have great difficulty for him. He called it S at times, at other times correctly, and finally returned to calling it S. He wrote his name James correctly but he could not call the letter E after he had written it. He kept calling it S, although it was pointed out to him and he himself pointed it out clearly. His refraction was about emmetropic but I could get no accurate test of vision since he was never certain about his letters. His field of vision was normal, and he was right-handed. In other respects he was fairly bright, seemed to understand words and commands, knew the meaning of ordinary words, recognised objects and their uses, and according to his mother was talkative, communicative, even garrulous at times, and played with other boys in the street in a normal manner.

I had a letter from his teacher, and she sent me a few tests which she made of his writing at dictation and at copying. He writes very well, particularly his name, and I repeat that this act appeared to me when I examined him to be done automatically. As stated, he was right-handed and evidently copied correctly.

I myself made some tests of his spontaneous writing, which I have unfortunately lost, and which exhibited the earmarks of classical motor aphasia, although it must be remembered that motor aphasics, as a rule,

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* Read in the Section on Diseases of Children of the American Medical Association at the Fifty-seventh Annual Session, June, 1906.

1. Morgan, W. Pringle: Brit. Med. Jour., Nov. 1896.

2. Hinshelwood, James: Lancet, 1900, vol. i., p. 1506; also Ophthalmic Review, March, 1901.

3. Nettleship, E.: Ophthalmic Review, March, 1901.

4. Wernicke, Otto (Buenos Ayres): "Angeborene Wortblindheit," Centralbl. f. pr. August, 1903, p. 264).

5. Thomas (London) The Ophthalmoscope, August, 1905, (reports 3 cases); also Stephenson, Sidney: "Congenital Word-Blindness," Lancet, September 17, 1904, referred to in Centrbl. f. pr. Augenh., 1906, p. 59, in the abstract of Thomas' article; Lechner, C. S.: Weekblad voor Geneeskruunde, August 1, 1904.

write no better from dictation than they do spontaneously. His inability to learn his letters accurately, his consequent inability to remember and recognize words, smacks of just ordinary ignorance, and there is a strong temptation to dismiss the case by calling the boy a fool; but his obvious general intelligence about objects, his normal perceptions in recognizing the meaning of spoken words, and his obedience to commands that involve other things than writing save him from this criticism. He is normal in respect of reading written or printed words or letters. His word-blindness is not for other written symbols, for he can easily recognize and correctly call figures. This case is then distinctly anomalous and is not a pure case of word-blindness, for it bears some of the marks of motor aphasia, e. g., the meaningless scroll which he wrote for me spontaneously. He is obviously word-blind for written and printed letters, but not so for figures. I have described his condition as word-blindness, but this expression is incorrect. I would describe it rather a word-amblyopia for written and printed alphabetical signs or symbols. It appears just to me to coin this expression, 'word-amblyopic," to describe these cases in which the word-blindness is incomplete. The lesion is doubtless a congenital one, and it probably consists in imperfect development and tardy reaction of the word and letter memory-cells. I conceive the lesion to lie high in the cerebral cortex, probably in the region of the angular gyrus on the left side, seeing that the boy is right-handed.

CASE 2.—A boy, aged 9, in higher walks of life than the first, was brought to me by his father to see if there was anything the matter with his eyes, since he has never been able to read.

Examination.—He is a bright, smart, alert boy, comprehends words and sentences perfectly when spoken and knows common objects and their uses, but the moment he is set to look at written or printed words or to write at dictation he becomes confused and shows all the signs of shyness and a lack of self-confidence. He recognized his letters without error, but when the letters were put together to form words the difficulty began.

He called the word "how," "you;" "are," he called "ray;" "made," "ham" and "man;" "get," he called "gee" and "give" and on a third trial "eat;" "ham," he called "eat;" (here we recognize a faint association of ideas); "monkey," he called "kind;" "sky," "kind;" "floor," "four;" "chair," "cy." When asked to write "wood," he wrote "dans;" "dog," "dad;" and "by," "bl." "Rat" and "cat" and "all" he spelled correctly; "horse," he spelled "hoise;" "there," "thit;" "mama," "mie;" "papa," "pipa;" and "eye" he could not spell at all. He wrote his name accurately and quickly, but apparently automatically, and called it correctly afterward, but "James," which he had written with a y, he called "this." My name "Herbert," he wrote from dictation letter by letter, "Herbdred," and called it "purram;" "Anna," he called "Ed."

When asked to make figures his whole demeanor changed and he approached the desk cheerfully and with apparent confidence. He made figures accurately, knew them all, and did several small sums in addition and subtraction as quickly as any child of his age could.

I do not believe there is any sign of motor aphasia in this case, because, although he wrote at dictation imperfectly, yet the letters of his writing were all correctly made, while they were improperly put together. They never degenerated into a meaningless and unrecognizable scrawl, as is common with motor aphasics when they write spontaneously or at dictation. His vision was normal; his fields, also; and he was right-handed. The significant and peculiar fact of this case is that the boy can recognize letters, the component parts of a word, and can pronounce each letter in each word; but when he has finished he can not, except with several well-known words, such as cat, rat, and dog, make the sound which the combination of letters really warrants; nor can he in many instances remember the pronunciation which has been fixed by authority.

ARBITRARY PRONUNCIATIONS.

To depart for a moment from the immediate consideration of the case in hand, I would like to know who says that c-a-t spells cat, except by admission and authority of custom and wont? C-a-t spells çate, but custom and authority have made it cat, and cat it remains by statute. But d-o-g spells dog, and can not be made to spell anything else. Those who learn to read English always have this difficulty before them, and it would be interesting to know what difference there is in the relative facility with which children learn English, which is filled with such arbitrary pronunciation, and some other language in which each vowel and consonant has a definite value and the same value always under the same circumstances, such as Italian, Spanish, and German. Compare the English words "tough," "though" and "slough," for example. No such difficulties, I believe, exist in the three other languages mentioned. I believe, and it is reasonable to assume, that word-amblyopia exists more frequently in English-speaking children than in those speaking other languages that have not the difficulties of the English.

METHOD OF PUBLIC SCHOOL INSTRUCTION UPHELD.

To return to our subject: This boy can recognize the constituent parts of a word, but not the entirety, except in the case of a few words which have been firmly impressed on the torpid cerebral cells by repetition. To my mind, this fact is the source of a good prognosis for this boy and for similar cases. It seems probable that if individual letters can be remembered, words which are composed of letters should be remembered under repetition, and this prognosis is all the more supported by the present method of instruction in vogue, in the public schools at least. I refer to the method by which children are taught to read by looking at words and recognizing them as a whole. Such a boy who can differentiate a "t" from a "z" could certainly learn to differentiate the word "lake" from the word "dog," and call them correctly, since they have no resemblance whatever to each other.

In short, the matter appears to reduce itself to a repetition of impressions on the cerebral cells. But there are twenty-six letters in the alphabet, and many thousands of words in the English language, and there's the rub. When we once eliminate the old method of analyzing and spelling a word to get its pronunciation, we assist these cases of word-amblyopia by eliminating in a measure the necessity of a perfect auditory memory. For example, in pronouncing and spelling the word "mutton," two acts at least of the auditory memory are necessary: First, that m-u-t spells mut, and, second, that t-o-n spells ton; then comes into play the constructive faculty to put the two together and pronounce the combination as "mutton." But when a child is taught that the word "mutton," with its visual marks and characteristics, stands for the sound "mutton," the fact is accomplished easier and is not so complex. A simple and single act of word memory alone is sufficient. Thus the constructive act is avoided. I conceive that the modern method of teaching reading is infinitely superior to the old in that it is simpler, easier, and less complex.

In the case before us I believe that the *auditif* is im-

perfectly developed; witness the pronunciation of my name, Herbert, spelt slowly, letter by letter, as "purram." This is not unreasonable, since the visual speech-center and the auditory are in juxtaposition. I believe this case is one of word-amblyopia, associated with slight word-deafness; and I think it is reasonable to coin the expression "word-amblykusis" to parallel the expression "word-amblyopia." Since the boy is right-handed, the lesion probably lies on the left side and in the angular gyrus.

DIFFICULTY WITH MATHEMATICS.

In this connection I would like to call attention to the fact that throughout their lives many people are unable to learn mathematics, or at least are more backward in learning and comprehending it than would be reasonable to expect from their general intelligence. Some years ago I was discussing this point with Prof. William R. Echols, professor of mathematics at the University of Virginia, who is not only a profound mathematician, but also a philosopher. I cited my own case as that of one who could never learn mathematics, and asked him if he had any philosophic explanation of the fact. He replied that I had no memory for symbols. I believe he was correct. Mathematics has always been a bugbear to me from childhood. Every other department of learning which I have essayed has been fairly easy to me, but in the presence of figures I become as shy and shamefaced as the last boy whom I have described was in the presence of written words. The formulas of trigonometry and conic sections, along with the rest of the higher mathematics, are to me as unintelligible as the cuneiform inscriptions on the walls of ancient Babylon, or the hieroglyphics on the pyramids of Egypt; yet I believe I can think in a fairly straight line, form a syllogism, and draw a conclusion consistent with the necessary forms of thought. Mathematics that is not transcendental deals with cubic space, or the elements of it, and with the relationship of things to each other, and many a man has been able to achieve good results by the practical handling of things without being able to reduce his acts to the analysis of symbolic thinking. This is the illustration of the so-called practical man who, when he gets uniformly good results, must understand what he is doing, yet the symbolic figuring representing his acts would be totally unintelligible to him.

I believe figure-amblyopia is the explanation of the inability of some people who, although intelligent and logical in other respects, are incapable of understanding symbolic mathematics. Now letters and words are symbols of one kind and represent thought, even as figures are symbols of another kind and represent thought, and in the last case cited we have seen that word amblyopia may exist with good figure sight and memory; even so I believe that good letter and word sight and memory may co-exist with figure-amblyopia. I believe this form of amblyopia should be classed as a distinct thing and placed in the same category with letter and word amblyopia.

IMPERFECT APPRECIATION OF MUSIC.

In this connection, it is pertinent to refer to the fact that many people apparently have an imperfect appreciation of or memory for musical sounds. There are some whose musical appreciation is so defective that they can not recognize a tune unless it has become very familiar, perhaps not even then. There are others who can carry in their memories the sequence of musical notes and who can tell when there is so much as a demi-semi-quaver of flatting in rendition, but who can not sing or reproduce in any natural way the simplest tune with accuracy. The first class have highly defective musical memory; the second have a good memory, but can not regulate the sounds of their own voice or of an instrument in order to reproduce perfectly their auditory memory pictures. Those who have good memories and can reproduce by voice or instrument their auditory musical pictures are said to have talent for music. Savages seem to have no native faculty for making music. Their music is really noise. It is distinctly not "a concord of sweet sounds," yet they have some precedents in the singing of birds, the soughing of wind in the tree tops, the rhythmic fall of water. Music and civilization go hand in hand. Many without the so-called "good ear" play well and accurately by note. Such have poor auditory memory for sound symbols, and their art consists in good memory for written symbols and the constructive faculty of reproducing that which they know by another symbol.

The custom of singing in concert, common in some schools, particularly schools for very young children, should be cherished and extended. It would also be easy to teach the value of the written symbol by singing in concert from the text, so to cultivate the brain center for music symbols. As a boy or young man at school or college I knew none who could play an instrument unless it was some boy who learned the piano at the expense of the respect of his fellows. It is a cheerful and healthy sign nowadays to see many boys who can play one or more instruments, and no modern college is complete without a mandolin or glee club. Generations of musical habit beget musical inclinations and talent. Some nations appear to be more musical than others. That nation which has attained homogeneity and is ancient seems to be musical and in direct proportion to its homogeneity and antiquity. It seems that the Italian race has had the greatest homogeneity, antiquity and culture, and its musical talent and love of music is practically universal. Almost all Italians sing and play some instrument, many play several. The German appears next in order. If musical training were a part of the education in our schools, music would in several generations become an intellectual habit and we would establish a distinctly American school of music.

The condition of defective musical appreciation has been called *amusia*, obviously quite incorrect; the "a" privative is too sweeping. Complete loss of musical sense may be called *amusia*, but defective musical sense is amblymusia. In all probability there is a center for the appreciations and memory of musical notes, and it is obvious that many have imperfect memory for them. This should be classed with word and mathematical symbol amblyopia.

All these things are interesting and of importance in the training of children. When cases of this description are observed they should be carefully differentiated and similar cases should be grouped together. Methods of teaching should be instituted to waken the torpid cells into activity, and I believe the basis of the instruction should be repetition.

LEFT-HANDEDNESS.

I have, however, a suggestion to make in the matter of treatment which is more radical than the foregoing, but which may be intelligently combined with it. It appears universally admitted that in right-handed people the centers for speech and allied acts lie on the left side of the brain in the territory supplied by the middle menin-

geal artery and its branches. When symbol or auditory amblyopia exists in such children, it is a reasonable idea that they may be taught to be left-handed. It is improbable that the corresponding cells on the right side are similarly affected, and thus the speech center and the centers for symbols and sounds may be transferred entirely to that side, or the right side be so educated that it takes command. Experimentation should be made along these lines, and it is my purpose to put this idea into execution in one of the cases described.

At present no postmortem corroboration of the assumed congenital lesions is extant.

CONCLUSIONS.

1. There is an incomplete word-blindness which is congenital and which should be called word-amblyopia.

2. There is doubtless an incomplete congenital figure-blindness, which may be called figure-amblyopia. This may be the basis of the inability of some children to learn mathematics as easily as their general intelligence would lead one to expect.

3. These two forms of amblyopia may be called symbol-amblyopia.

4. There is an incomplete congenital word-deafness which should be called amblykusis to parallel the term amblyopia.

5. There is doubtless an incomplete congenital musical-note deafness which may be the basis of the inability of some people to remember and appreciate musical notes; this should be called music amblykusis, or amblymusia.

6. When cases of these kinds are met in the schools they should be carefully differentiated, properly grouped and instructed.

7. The basis of the instruction should be repetition, coupled with patience.

8. It is reasonable to teach such children to become left-handed, in order that the speech, symbol and sound centers on the right side of the brain may be cultivated to the exclusion of those on the left, or as supplemental to the defects on the left.

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DISCUSSION.

Dr. T. W. Kilmer, New York City, said that diagnosis is very difficult. It is a hard proposition to have a child brought into the clinic with the statement that it can not read. He has had several such cases and has not recognized them. When he was at college mathematics was his worst branch. He has always had special difficulty with the infant-feeding formulas because of the figures. Also, much money has been spent on his musical education. He plays by ear on several instruments, but does not know a note. Probably he has amblykusis, which Dr. Claiborne mentioned. He asked regarding prognosis and treatment, whether the prognosis is good, and whether Dr. Claiborne advocates removing the children from school. With reference to the ingenious plan of teaching a child to be left-handed, he asked whether Dr. Claiborne has carried it out or has just begun it.

Dr. J. H. W. Rhein, Philadelphia, said that in Dr. Claiborne's second case it would seem that the nature of the labor would have some bearing on the etiology of the condition which Dr. Claiborne described as congenital word blindness. If the child had had a hemorrhage which caused pressure in the region of the temporal convolutions on one side, it would readily explain some of the symptoms described. Whether the birth was easy or difficult, whether forceps were used, and whether there were symptoms immediately after birth indicating injury at the time of birth are important facts to be considered in explaining the nature of the interesting phenomena described.

Dr. J. H. Claiborne, New York City, said that, not being an authority on the subject, it was difficult for him to express a definite opinion of prognosis. Inasmuch as each patient could recognize simple words like cat and dog, which had been constantly repeated to them by their teachers, it was clear that by repetition something could be done for them. He believed that in proportion as an impression can be produced on their minds by repetition, in that proportion can a good prognosis be made. Dr. Claiborne said that Dr. Kilmer has good musical sense, but has what might be called symbol amblyopia. Dr. Rhein has suggested a new thought in speaking of the nature of the labor. Cases should be studied and the labor should be inquired about, so as to ascertain where the harm was done, and on which side. Dr. Claiborne does not think that children should be set down as deficient in the public schools with no specialization of their deficiency. While they are classed to some extent in the public schools, no one has yet pointed out exactly in what respect they are deficient. Obviously they can not be treated until it is known in what respect they are deficient. If they have symbol amblyopia for letters or reading, such children should be put together and by repeating words and sounds, he believes they could be taught to read. In the matter of musical sense, of course, if one does not wish to study music, one should not be compelled. One of the greatest professors of the universities told him that he not only could not understand music nor appreciate it, but that it was painful to him. Dr. Claiborne added that this is the first time the subject has been discussed in the United States. It has been brought forward in England, in Germany and in South America.

NEURASTHENIA AS MODIFIED BY MODERN CONDITIONS; AND THEIR PREVENTION.*

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Whether neurasthenia be a condition or a disease or whether the term itself be properly or improperly used, the fact of its existence, of its untold mystery and increasing frequency is as certain as is the fact of civilization itself.

In all the fields of nervous maladies none is more widespread in its distribution and perhaps none more preventable than neurasthenia; a disease of unknown character and localization, the exact nature and seat speculative only; partly a morbid psychical asthenia and partly physical asthenia and irritability; so closely allied to hysteria and hypochondriasis that such can only be differentiated by grouping symptoms, by the symptoms-complex; simulating often degenerative diseases as tabes and general paresis[1] or incipient tumors; closely allied, often a seemingly transition stage, to the most grave psychic diseases; of no known pathology, except it be the late imperfect pathology of fatigue cells; the only sure known phenomena being the assured results, the symptoms which are protean.

Whether the conditions be designated as nervous exhaustion, nervous weakness or irritability, encephalasthenia, the American disease, "a paresis of attention and will," psychic fatigue, a diminished power of resistance to nervous and emotional strains, an "abnormal mental condition," or "disturbed ideational life," or whether we limit the term neurasthenia to conditions of the nervous system of lowered vitality to which functional disorder of some bodily organ may be assigned as a cause; or whether we include, as is often the case, under neurasthenia "many varied types of psychic disorders as the fear neuroses, insanity of doubt, different obsessions, hypochondriases, vasomotor paralysis, the

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Osler: "Practice of Medicine."

prodromal stage of organic brain disease," in any and all cases, the fact is indisputable that in America there is an increasing army of neurasthenic cases and in all classes, from the highest to the lowest.

We will better understand neurasthenia when we learn better to observe mental functions with the same precision as we observe the functions of the heart or other organs, individualizing the normal intellectual faculties, observation and power of attention, memory, judgment, reason, emotions, volition, their force and rapidity; the normal facial expression and speech, temperament, character, and actions.

In considering the condition known as neurasthenia it can not be fully explained as a variation from the normal psychic life, if by such we mean mind or intellect, nor as a variation from the normal physical life, brain or other organs. The "something" that exists as an independent Spirit in the body and after the body must be a partial factor.

If we have decided that the body is the only real independent variable and that psychical functions are the result of an infinite and unknown variety of biochemical and protoplasmic changes of body and brain, we have yet to consider that "something" which the philosophy and theology of all ages and races have groped for, and to conclude that neurasthenia is not a condition of any one organ, brain or body, but a condition of the entire individual. In fact, in all diseases advanced medical thought is taking more cognizance of the individuality and the personality of patients. "I am a soul," said Epictetus, "dragging about a corpse," and if the sage had remarked, "A sickly soul dragging about a sickly body," he might have been regarded as an ancient illustration of neurasthenia. Though modified by the physical, the absolute condition of neurasthenia seems one of mind, body and soul, and by restoring the physical the psychical may regain its tone.

Nature prescribes a boundary line to life, to all organs and functions of life, and surely to the nerve force of every individual. When that physical and psychical line is passed, we get a morbid condition known as neurasthenia. The difficult problem is to know the boundary, and then keep the middle of the road, at moderate speed, and not cut into the ditches, or waste power in hurry. Worry and hurry seem the most controllable factors in neurasthenia.

In the "Phædrus," Plato describes man as having three natures, and compares him to a pair of winged horses and a charioteer. "Of the two horses one is noble and of noble origin, the other ignoble and of ignoble origin; and the driving, as might be expected, is no easy problem." The noble steed endeavors to raise the chariot, and the other to bring it down.

The case of a woman taking the rest cure with a telephone at her elbow suggested the theme of this paper. Though many causes must be the same now as centuries ago, yet Hippocrates knew no telephone. Though the same geologic forces, heat, air, water and electricity for all ages have transformed the earth's surface, so in the main, unchanging causal conditions, through all time, have effected neurasthenia. Just as geologic forces change some portions of the earth's surface easily, and sometimes grotesquely, as in sandstone, leaving the hardy granite quite unscathed, so the same underlying causal conditions affect the nervous system of individuals, as they prove to be earth, sandstone, or granite, to the great stress of what we term modern civilization and social conditions.

The main etiologic factors which, in a measure, may be prevented seem to be:

1. Faulty hygiene.
2. Trauma.
3. Toxins and the neurasthenia of organic and functional diseases and of removable reflex causes.
4. Overwork and worry.
5. Heredity.
6. Mental education at the expense of the physical.
7. False ideals and standards of life.

FAULTY HYGIENE.

Disregard of the first and simplest principles of hygiene is often a preventable cause of neurasthenia. Many forget that the body is a large per cent. water, and forget to drink their quota of six or eight glasses of pure water daily, not with meals; or are careless of skin activity; or get insufficient sleep with too little oxygen or not enough food or improperly selected food, or with an idolatry for work, have no time for exercise or play. Tea, coffee, alcohol and tobacco in excess, and the American faults of bolting rich food and drinking ice water, are surely preventable causes. A certain percentage of the dust, and whistling, noisy pandemonium, smoke and bad air of the city, is in some measure preventable. Strictly following the simplest rules of sanitary science and dietetics would prevent many cases of neurasthenia, just as such measures cure tuberculosis.

TRAUMATIC NEURASTHENIA.

A common cause of neurasthenia is injury, particularly by transportation in this age of rapid transit and consequently of accident. The hurry and worry alone of too rapid travel, aside from the injury which acts out of all proportion to its severity, racks many an otherwise strong nervous organization. The liability of neurasthenia from accident, to those having by predisposition enfeebled resisting powers of their nervous system, is apparent when we consider that the total summary of railroad accidents in the United States for 1888, which is a fair yearly average, represents 5,288 killed and 25,888 injured,[2] with no account of injury from other methods of transportation, by the many electric systems, gasoline motor vehicles, cable roads, surface vehicles of all descriptions, elevated and underground roads, underwater, as well as on its surface; bicycles, balloons, airships; and all seeking the highest rate of speed, combined worry and hurry and consequent neurasthenia.

LOCAL NEURASTHENIA.

Local neurasthenia, as spinal, cardiac, cerebral (illustrated by the postal clerk who could pigeonhole 8,000 letters one day and very few the next),[3] writer's cramp, etc., requires little comment except that their cure, which can be accomplished only by rest, suggests their prevention.

TOXIC NEURASTHENIA.

The familiar forms of neurasthenia accompanying the convalescent period of acute febrile diseases, such as scarlatina, typhoid, malaria, pneumonia, influenza, syphilis, and all other debilitating diseases, suggest the theory that some toxin may be the basic cause of all neurasthenic conditions. The neurasthenia of phthisis; of lithemic, rheumatic, and gouty conditions; the neurasthenia accompanying the puerperal state, that of the period of the menopause; the neurasthenia of exophthalmia, all suggest such a toxic cause. The neurasthenia of metal-

2. Bailey: "Accident and Injury."
3. Wood, H. C.: "Nervous Diseases and Their Diagnosis."

lic poisoning and of carbon monoxid poisoning[4] is definitely toxic.

NEURASTHENIA OF ORGANIC DISEASE AND OF REMOVABLE REFLEX CAUSES.

Under the misleading term of neurasthenia many diseases are classified which are organic, particularly early and latent tuberculosis, atypical syphilis, the obscure lesions due to arteriosclerosis and autointoxication, particularly from the alimentary tract. When we consider the German exaggeration, *"Yeder man hat ein bissen tuberculosen;"* when we consult statistics of mortality that one-seventh of the population die of some form of tuberculosis;[5] when we consult reports of tuberculosis sanitaria, showing a large percentage of cases having little or no temperature, cough, sputa, no night sweats, no tubercle bacilli, how many early and latent cases are unrecognized and termed neurasthenia, which on earlier recognition might have been prevented and cured? An uremic convulsion or albuminuric retinitis, or retinal changes of arteriosclerosis too often reveal an apparent condition of neurasthenia with little or no albumin in the urine, with few or no casts, and with even a fair percentage of urea on repeated examinations.

I never examine a case of neurasthenia without bearing in mind the valuable instruction of my late friend and benefactor, Dr. J. William Pepper, who used to lay such stress on systemic poisoning of toxins from the alimentary tract as a potent cause of neurasthenia, and who had such marked success in the treatment of such cases. The general practitioner of years' experience sees more illustrative cases, perhaps, of neurasthenia than the nerve specialist.[6] Like the poor, they are always with him.

Gynecologists assign a uterine displacement as a reflex cause of neurasthenia. Surgeons declare a floating kidney or some movable organ is the cause. The practitioner insists that high living, liver disease, gout, lithemia, alcoholism, a toxin of some internal secretion, is the fault. Genitourinary specialists, particularly the French writers, have their view of the case; nasal specialists ascribe a spur or adenoids or hypertrophied turbinates as the reflex cause; the eye specialist attributes to eye-strain, with its well-known drain of nerve force, all the phenomena. Who is right? Are all partially right?

Have all men by heredity and training certain possibilities of nerve force, and if they go beyond the boundary line by reflex cause or other cause could all men become neurasthenic? "Man," says Shelley, "is an instrument over which a series of external and internal impressions are driven like the alterations of an ever-changing wind over an Eolian lyre." Surely it is incumbent to keep the harp well strung, and to remove every possible reflex drain of nerve force to prevent neurasthenia, and to assist in averting neurasthenic conditions.

OVERWORK AND WORRY.

Continuous mental strain, excessive overwork of mind and body, excess of all kinds, is agreed to be a chief cause of neurasthenia, and yet these conditions are not effective in the savage, tending to prove that in the vast majority of cases it is the worry and anxiety of civilization, and not the work, which creates the condition. In the hard-working farmer with no mental overstrain, unless it be worry, as well as the teacher or financier who is subject to the greatest mental tension, we find typical neurasthenia; in one of most complete leisure, with no apparent strain, mental or physical, we meet the same perfect clinical picture of neurasthenia. What is the keynote of explanation in each instance? In many there is an astonishing propensity and idiosyncrasy for worry. If we may be allowed the fancy, the imagination, there may be a "worry center" just as real a psychic center as the motor center which controls the movement of the arm or foot. Such a "worry center" may be a developmental anomaly and exist by heredity only in certain individuals, and it may require some mental injury or shock or reflex cause of some diseased organ to bring it into excessive action, but the worry center is surely part of psychic brain anatomy. Surrounding this fanciful "worry center," pressing and mechanically irritating, and poisoning like the toxin of cancer, are brain tumors, as real as tubercle or sarcoma: brain tumors of fear for the future, this world or the next, gloomy forebodings, domestic difficulties, etc. It requires the surgical operation of a strong will to enucleate them and to restore mental health. Physiologically, such a "worry center" must be connected with association centers by association tracts, the higher physical centers inhibiting, controlling the resultant idea or thought.

What connection has the "worry center" with the whole sympathetic system which controls normal functions of all organs of the body? Must the pathology of neurasthenia always be unknown, this great disturbance of the psychic phase of brain life which is just as apparent and as little understood as the disturbance of motor centers in the well-known diseases we call epilepsy, chorea, and excitable mania?

HEREDITY.

As a rule, the causes of neurasthenia are not one, but the combination of many causes: faulty hygiene, overwork, worry, the modern stress of social, political or business life, with often a basis of unrecognized or non-recognizable organic disease, and yet heredity may be a chief cause, a morphologic fault of the original cell, an embryologic fault of the first tissue. It is according to this view endogenous, inside the cell from the beginning. External stimuli, the peripheral nerves and organs, have not so much to do with the production of neurasthenia as fatigue lesions of originally weak cortical centers (which ones we do not know), and of tracts (which ones we do not know) connecting them.

Such an embryologic condition, dependent on ancestry, is just as much a part of the man's mental make-up as his individual nose or his ear or his thumb are of his physical being. The fact that individuals vary so enormously in their capabilities for different kinds of mental and physical action and thought; that while some are endowed with scarcely enough nervous energy for eating and walking, others have a nervous organization capable of sustaining the greatest burdens of advanced civilization, bears out the theory that in certain instances individuals become neurasthenic because by nature and constitution, by structural and physiologic defects of their central nervous apparatus they have the predisposition to neurasthenia. Perhaps no better or older argument than heredity has ever been adduced. It stands a foundation cause as secure for all time as the Doric, Ionic and Corinthian columns stand in classic architecture. The thought having filled volumes of literature is as musty, old and ragged with age as an oriental rug, and, too, as valuable.

Granted, then, without discussion that heredity must

4. Marie: Bull. Med. Soc. Hop., Paris, 1888, v.
5. Strümpell: Text-Book of Medicine.
6. Weisenburg, T. H.: "Hysteria Simulating Brain Tumor," P. Med. Jour., May, 1906.

be reckoned as a cause, yet it is futile to harp on this plain, true, etiologic fact except as it leads by its recognition to the better care of a weak article and strict scrutiny of health in intermarriages. The future environment and surroundings of the child's life are the important factors because they only can be modified. What a useless, hopeless, pessimistic and impracticable view of neurasthenia in this practical age, to leave it to ancestry with the sage remarks that generations back treatment should have been instituted!

Prevention can not be too strongly urged in the marriage of neurotics who, unfortunately, are apt to seek with each other the marriage relation. The results attained in plant species, embryology, fertilization, and segmentation: the results attained in the breeding of high-class horses, dogs, and other animals, lead one to suggest that the most important part of the marriage license should have in view the prevention of neurasthenia and allied diseases, and should include a clean bill of health of the contracting parties.

A recognition of the factor of heredity is important in training the child. As has been often remarked, unfortunately those who have most directly the responsibility of training, i. e., the parents, are least fitted for the task of molding the child's psychic life, of leading out the functions of the child's mind to their best maturity and advantage. They may well know that "a spoiled child is never a happy one," and yet, being themselves victims of ancestry, they can not properly bring up their own defective offspring. Emerson wrote: "It matters little what your studies are; it all lies in who is your teacher."

EDUCATION.

Among the most common of remediable, or preventable, neurasthenic conditions are faulty systems of education, overcrowding the rapidly growing boy or girl in school work, weighing them down with home work when they should be engaged in relaxation of play and exercise. Even in college life, whether carefully rounded physical development, not over development as in some modern sports, is not of more importance than the high pressure of book knowledge. After all, education is orientation. It consists in original and individual power, not in the accumulation of facts; and such power must come largely from physical and practical training, and not from exercising the memory cells with book knowledge, however important in a lesser degree such mental gymnastics may be. A foundation of vigorous health and its accompanying high spirits is far more important than training the memory cells.

IDEALS AND STANDARDS OF LIFE.

Regarding ideals and standards of life, seeking short cuts to positions for which candidates are not fitted, false ambitions, and the inevitable disappointment and failure, the subject is too extensive even to touch on, for it includes the philosophy of all ages, all the philosophy of life and living. However, in the accumulation of material and immaterial wealth, in this age of knowing everything and studying everything, there is a reserve, a mental poise, a firm hold on common sense which can be cultivated and which tends to prevent neurasthenia.

SUMMARY.

The prevention of neurasthenia must be along the line of knowing causes and avoiding them.

1. Let every individual know his limitations and act accordingly. Let every individual know his own boundary line of nerve force and never cross it. Let every individual live less of the strenuous life of any ideal hero, unless there is the same muscle and nerve force and training and honesty of purpose and endeavor also, which characterize such hero. Let every individual recognize heredity, predisposition and individuality of nerve force.

2. Learn to hurry little and to worry not at all. An illustration consists in the fatigue from the hurry to catch a train which is out of all proportion to the physical effort expended. It is the worry, the psychical fatigue, which is chiefly injurious. Individuals are too much like the modern telephone sign, "Always on duty," for hurried and worried business or hurried and worried pleasure. Hurry alone or worry alone are poisonous to the normal functions of the nerve system, but the American combination of worried hurry is deadly. Each brings into full action the worst features of the other. They are incompatible and the resulting combination is fatal to nerve centers.

3. Discourage and prevent intermarriages of those of neurotic tendency and parentage, who are unfortunately apt to be fond of each other and to seek such unions.

4. Follow strictly the a, b, c, laws of hygienic life, thus avoiding, as far as it is possible, not only pure neurasthenia, but the neurasthenia incident on organic disease. Lead the simple life of plain food and regular occupations.

5. Be sure that ideals and aspirations of life are true. Study limitations and qualifications and work along the lines of least resistance. Work, which may seem to be a cause of neurasthenia, is often a prevention and cure, diverting the mind from those troubles and anxieties which do not exist in reality.

Hope for future progress must rest on increased knowledge of the phenomena which cause neurasthenia and increased common sense in avoiding the causes. Certain ultimate problems must remain unsolved, yet who can limit the possibilities of increased knowledge. The great New World of truth lies yet undiscovered. Surely what we do not know about neurasthenia would fill a larger book than what we do know.

EFFECTS OF APERIENTS ON THE PERISTALSIS OF THE STOMACH AND INTESTINES.*

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BOSTON.

We wished to study the effects of different drugs on the movements of the gastrointestinal tract. Before studying these effects we had first to find out the best method of observing such peristaltic movements. For this purpose well fed cats and rabbits were used. The animals were first anesthetized, the abdomen opened in the median line, and the intestines, including the stomach, exposed to full view. To protect the intestines from the air the animal was placed in salt solution, as advised by former investigators, in such a manner that the head and thorax were kept above the salt solution and the breathing not interfered with. In our experiments 0.8 per cent. salt solution proved to be the best.

After the animal recovered from the ether and the shock following the operation, the picture observed, as a rule, was as follows: The stomach was full of food and the entire small intestine empty and collapsed, while the large intestine, especially the lower part, contained

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nearly all the intestinal contents. There was no motion of the stomach or intestines. Presently the stomach began to expel food in the way described by former observers, and the intestines began to work. The peristalsis of the intestines as observed, consisted of circular contractions of different strength; some were so weak that they were barely visible to the untrained eye, others were so pronounced that they changed markedly the volume of the intestines, and lastly, circular constrictions were observed which practically occluded the volume of the intestines, pushing food backward and forward from the constricted part. Besides these different grades of circular constriction peristaltic waves of varying intensity were observed, some in which the undulations were so slight that they could be properly seen only when very carefully watched and under specially good light. Similar slight peristaltic waves were also observed in the stomach. Others again were pronounced, and in still other instances the peristalsis was so rapid that food passed in a few seconds through different loops of intestine. The circular contractions and peristaltic waves occurred either singly or combined on one or more parts of the intestines for shorter or longer periods; then they ceased, and the same movements were to be seen in other parts of the intestines. The intestinal peristalsis was not only confined to parts of the intestines containing food, but occurred also in parts of the intestines apparently empty, only here peristalsis and contractions were, as a rule, not so marked and not so frequent. Circular contraction and peristalsis in the large intestine were practically the same as in the small intestine, only to a less degree and slower, except for the marked circular constrictions. A regular anti-peristalsis in the large intestine, as recently described, could only be observed in a few instances.

The most striking feature in all our observations was the complete irregularity in the action of the intestines. Constrictions of different intensity or peristaltic waves of different length and depth occurred here and there for a shorter or longer period, or no activity whatever was present for shorter or longer periods, and without any apparent cause. The intestinal contents were propelled quickly or slowly, or not at all. Often peristaltic waves and constrictions were marked for many minutes yet different particles of food which had distinct relation to one another did not change their size or position. A so-called segmentation of intestinal contents which in the last eight years was described as a normal function of the intestinal peristalsis was not once observed by us.

As our experiments in the salt bath differed so completely from Cannon's observations, we repeated his experiments with the *x*-rays. With such a method of observation, only the moving of shadows, changes of configurations and variations in the depth of the shadows can be observed, if enough bismuth is present to produce a distinct picture. Movement of the intestine itself, of course, can not be seen.

In about 60 experiments with the *x*-rays, as far as this method allowed, we verified our observations made on animals in the salt bath. In these experiments cats gave the most satisfactory pictures, with the exception of one rabbit which had been fed on bread for several weeks. The weaker contractions and slight peristaltic waves of stomach and intestines could not, of course, be observed as they could not give a distinct difference on the fluoroscope, only the marked circular contractions and the strong peristaltic waves changed the bismuth shadow so that they could easily be observed. A rhythmic segmentation of food could never be observed. Food particles moving up and down in the lumen of the intestines could occasionally be seen. Movements of the intestines containing little or no food could not be seen. In fact, only the intensified or coarser movements of the gastrointestinal tract could be observed with the *x*-rays, and not the total work nor the finer working of the intestines.

As a rule the first particles of food reached the cecum in about six to seven hours after the animal was fed, as seen by the *x*-rays. The same amount of time elapsed for the filling of the small intestines in the animal kept in the salt bath.

EXPERIMENTS WITH DRUGS.

After this preliminary work was done we studied the action of different aperients on animals in the salt bath and with the *x*-rays. With different drugs we made control experiments with animals kept under normal conditions. The drugs experimented with were croton oil, aloes, podophyllin, gamboge, scammony, elaterium, euonymin, jalap, rhubarb, cascara, frangula, senna and purgatin. Of the salts, sodium sulphate, sodium phosphate and sodium chlorid were used. Strychnin and nux vomica were also tried.

The results of the experiments did not differ much in the animals, whether they were kept in the saline bath or observed under the *x*-rays, but some of the control experiments showed that both methods used changed the normal condition of the animal. The results in some of the control experiments showed that both methods used must act as stimulants to the gastrointestinal tract. In the salt bath the saline solution may act as a stimulant to peristalsis. What factor may produce the same results in the experiments with the *x*-rays can not be stated a *priori*. It is certain that some drugs used in both methods acted as aperients, whereas the same drugs proved without any effect in the control animals.

EFFECT ON PERISTALSIS.

Of the drugs used, croton oil, aloes and podophyllin increased markedly the peristalsis of the whole gastrointestinal tract. The peristalsis of the stomach was much intensified. With aloes the peristaltic waves began high up in the fundus of the stomach and made very deep constrictions, this organ practically trying to expel the contents with considerable force. It is true the number of peristaltic waves became decreased from 4 to 5 to 2 to 3 each minute. But in spite of this reduction, the organ emptied itself with great rapidity, thus showing that the expelling force was much increased.

Scammony, gamboge, elaterium, jalap, euonymin and frangula increased very slightly the peristalsis of the stomach, but markedly that of the small and large intestines, whether the animal was kept in the saline bath or observed with the *x*-rays. With scammony and gamboge the animals experimented on showed besides increased peristalsis, marked diarrheic defecation under the *x*-rays, somewhat less in the saline bath, but the control experiments gave absolutely negative results as to defecation.

Cascara increased the peristalsis of the intestines, but caused no defecation in saline bath, but some under the *x*-rays. Tincture of rhubarb gave negative results, whereas the infusion of rhubarb increased peristalsis, caused defecation, which, however, was not diarrheic. The pharmacopeial preparation of senna gave negative results, but by making the infusion twice as strong, peristalsis was increased and defecation observed under the *x*-rays and in the saline bath. Purgatin gave no

results. Peristalsis was not increased, and there was no defecation even when the dose was increased to cause acute nephritis.

Of the salts, sodium sulphate increased peristalsis and produced watery discharges in all the animals experimented on. The same results were obtained in the control experiments. Sodium phosphate acted similarly to sulphates, but it did not increase as markedly the peristalsis of the stomach. Sodium chlorid in small doses was negative as to increase of peristalsis; in larger doses it produced a toxic gastritis.

Nux vomica did not increase peristalsis either in rabbits or cats, whether observed under *x*-rays or kept in saline solution. Control animals also gave negative results with this drug as to defecation.

From these results we may hope that aloes and podophyllin like the salts may be useful in atonic conditions of the stomach.

DISCUSSION.

Dr. H. C. Wood, Jr., Philadelphia, said that it is not at all certain that the intestines of the rabbit react as do the intestines of man. In fact, there is strong reason to believe that the intestines of the rabbit are not a criterion for those of the human being. It is known that, in general, purgatives act very differently on lower animals than they do on human beings. Especially is this so in the dog. It must also be so in the rabbit on account of the very different development of the intestinal tract. The rabbit's food is entirely herbivorous and contains a large amount of indigestible residue, and the intestine of the rabbit is made to accommodate this food; whereas man's food is much more concentrated and man's intestinal tract is made for a different purpose, and it is therefore only reasonable to suppose that the intestines of man react somewhat differently from those of a rabbit. Dr. Wood thinks, therefore, that any conclusions based on experiments on rabbits must be accepted with some caution as bearing on the human being.

There is one drug, he said, which might have been well studied with a great deal of benefit to the profession, that is physostigmine. It is the most powerful stimulant of nonstriated muscle. In gastric or intestinal atony this drug is of great use.

Dr. F. Pfaff, Boston, stated that he used cats as well as rabbits. Cats gave the best results with the *x*-rays. Rabbits did not give good results with the *x*-rays, except when fed for weeks on bread. As to physostigmin, he mentioned a research published last year. In Schmiedeberg's laboratory Heubner made experiments on himself with physostigmin to see how it would influence the intestinal tract. He also enlisted the services of a few associates, who, as they were medically trained and knew what they were taking, promptly responded by free evacuation of the bowels. In the Strassburg medical clinic, Heubner's experiments were repeated on patients with only one positive result. In all the other cases the patients complained of nausea, giddiness, tension in the head, profuse sweating and even vomiting, but defecation did not take place. It seems, therefore, that physostigmin can not be used at all to stimulate peristaltic movements in human beings.

BROMISM: WITH A REPORT OF CASES.

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This paper will deal largely with a problem of bromid therapy drawn from observation and the literature on epilepsy. Under the term bromism we include all the various toxic manifestations resulting from the continued use of any bromid or chemical with a large percentage of bromin.

Marked chronic bromid intoxication is a not infrequent occurrence and the very mild, often not recognized, forms exceed in frequency the more severe. To diagnosticate the mild types is of special importance.

For a number of years the bromids have occupied first place among the numerous drugs prescribed for the epileptic. Though given in a large number of maladies and pathologic conditions, no disease enjoys its use to such an extent as epilepsy. A large number of the nostrums, placed before the public by irregulars and professional pretenders, for convulsive and other nervous conditions, contain potassium bromid as one of their chief ingredients.

Spratling analyzed some thirty "patent medicine" preparations on the market, so-called cures for epilepsy, and potassium bromid was found to be the chief ingredient of each. To them can be ascribed a large amount of injury of which those afflicted with fits have received much the largest share, for their victims are peculiarly susceptible to the glowing promises for a trouble apparently so desperate and discouraging. The epileptic, carrying an extremely chronic burden, acquires sooner or later a more or less defective perception and judgment; he has inherited a weakened nervous system or acts on the advice of a parent or guardian whose judgment is not infrequently a little or much below normal; the result is he becomes an easy prey for medical grafters. Even the more conscientious licensed practitioner can and does make errors in the care of these patients, perhaps by careless or too infrequent visits. Often, too, the patient himself or those responsible may be indifferent.

Bromids have a place whose limitations are well defined in the treatment of epilepsy and other nervous disorders. Besides epilepsy, the drug has been used in nervous exhaustion following excessive mental or physical labors, neuralgia, migraine, hysteria, delirium tremens, pertussis, tetanus, spasms in children, pavor nocturnus in childhood, laryngismus stridulus, acute laryngitis, to alleviate spasms or pain in throat examinations, passing stomach tube, catheter or sound, vomiting of pregnancy or uterine diseases, dysmenorrhea, menorrhagia, nymphomania, satyriasis, masturbation, seminal emissions, gonorrhea, chronic alcoholism, morphiomania, nausea marina, cinchonism, strychnin poisoning, and other mental and physical disorders. In many of these disorders chronic bromid intoxication is improbable, since they are of short duration or only one or two doses are prescribed at a time.

BROMIN PREPARATIONS.

Only a few years after the discovery of bromin, in 1826, by Balard, was the chemical or its salts used as a therapeutic agent. Potassium bromid was primarily introduced as an alterative and resolvent to substitute the iodid salt. The class of cases for which it is recommended was completely changed after its sedative action became known. According to Binswanger, Lolock, in 1853, first brought the bromids into the foreground as a drug to be used especially in the treatment of epilepsy. There are now on the market over 40 bromid preparations supposed to have some therapeutic value. Of these, we seriously need consider only a few. From our standpoint of toxic action, a number of the bromates and compounds would not be placed in the same class as potassium bromid and similar salts.

Potassium Bromid.—Potassium bromid, used in much greater quantities than all the rest of the bromids com-

bined, contains 67.15 per cent. of bromin. Its basic element itself is much more toxic than those of most of the other salts. The depressant action of potassium on the circulatory organs must also be taken into consideration. It is not an easy problem to determine exactly how much damage the basic element of potassium bromid has done to the epileptic. For most of the *grand mal* seizures must of themselves throw a severe strain on the circulatory apparatus. In postmortems on a number of epileptics dying at the Kansas State Hospital for Epileptics a very large percentage presented hearts and blood vessels with marked pathologic alterations of a chronic type. Recently a report from the New York State Epileptic Colony appeared with a series of autopsies that gave a high percentage of chronic cardiac lesions.

Sodium Bromid.—Sodium bromid is a salt second in favor, containing 77.62 per cent. bromin. The 10.47 per cent. excess of its bromin over the potassium salt might indicate greater toxicity, but the reverse is true. Sodium salts, as a rule, are less toxic than potassium. Experience and experiments on dogs teach that it is better tolerated by the mucous lining of the stomach and intestines. On several occasions I have given large single doses of potassium bromid and sodium bromid to dogs and the former drug has proved to be more toxic. On one occasion two almost grown healthy pups of the same brood and of about the same weight were used. One received 15 gm. potassium bromid and the other 15 gm. sodium bromid. Both seemed about equally depressed. The dog given potassium bromid had his temperature reduced .6 F. and the other had a temperature reduction of .5 F. At a later time the same pups were given respectively 30 gm. potassium bromid and 30 gm. sodium bromid. The former salt very soon produced gastric distress and some vomiting, with a later reduction in temperature of 1.5 F., and the latter produced much less toxic gastric distress with a temperature reduction of .7 F.

Ammonium Bromid.—Ammonium bromid has 91.03 per cent. bromin. One therapeutist states that it has less toxic effect on the heart and other muscles; another that it ranks first as liable to produce toxic symptoms. This last conclusion might be attributed to the high percentage of bromin.

Lithium Bromid.—Lithium bromid has 91.92 per cent. bromin. If toxic, as well as therapeutic results, depended entirely on the percentage of bromin, then this salt should be given in smaller doses than the potassium or sodium. But with the same doses toxic action does not occur as readily. The diuretic value of lithium may prevent, to some extent, the untoward results.

Strontium Bromid.—Strontium bromid, having 64.6 per cent. bromin, has largely come into use during the last 7 years. Its adherents claim that its effect on the mucous surfaces is very mild.

Other Bromids.—The other metallic bromids are rarely used. I merely mention calcium bromid, having 79.96 per cent. bromin, gold bromid, trivalent salt, 54.87 per cent., zinc bromid, 70.97 per cent., bromid of nickel, 73.24 per cent., hydrobromic acid, 98.78 per cent., prescribed in the dilute solution but is irritating. The nickelous bromid is very irritating to the stomach. To bromoform ($CHBr_3$) have been accredited some cases of poisoning with a few directly chargeable deaths. Croker, in his third edition on "Diseases of the Skin," mentions a case of bromoform intoxication, having an eruption similar to that occurring from potassium bromid. The case was a child with pertussis developing papules, pustules, superficial and raised ulcers, and papillomatous tumors. Twenty-three minims had been given over a period of 25 days. An inadequate knowledge of the toxicity of bromotone (tribromtertiarybutylalcohol), bromocoll, bromipin and bromalin exists.

After reviewing the various preparations containing bromin, their toxic action can not be entirely ascribed to the halogen element. We are safe in largely attributing the toxicity of the metallic salt to the combination as such and not to any one of the individual elements separately. These salts seem to be absorbed as such, carried to all tissues and assimilated by the cells with some special predilection for certain groups. Doyon has reported a postmortem on an epileptic who had been taking potassium bromid for a number of years. The drug was found in all the organs, but chiefly deposited in the brain.

At the Kansas State Hospital for Epileptics when a bromid is indicated the sodium salt is now largely used. Potassium bromid has been used to a great extent at times. An extensive trial has been given the tribromid of potassium, sodium and ammonium, with no better results than from one salt. Strontium bromid, tried on some cases, has not proven its superiority to the few most largely used drugs. Bromotone has not been used on a sufficient number of cases to report results.

SYMPTOMS OF BROMISM.

There is more literature on extreme bromism than on the milder intoxications which have more practical value from the therapeutic standpoint. I have never observed some of the extreme types reported. In the better-grade institutions these do not occur, as the drug is used with precaution and the patient closely observed.

Care must be exercised in drawing conclusions regarding the mental symptoms of bromism in the epileptic. Many cerebral conditions occur from epilepsy itself. On the nervous system the bromid acts as a depressant, attacking the several divisions in the following order; (1) sensory portion of cord and reflex arcs, (2) afferent nerve fibers, (3) cerebrum, (4) motor tracts of cord, (5) efferent nerve fibers, (6) muscles. The action on the cerebral cortex in man is more marked than in the lower animals, due to the higher development entailing greater complexity and delicacy in brain organization. Dogs that were given bromids accepted large single doses of the drug with much less bad effect than was anticipated. Rosenbach found a reduced irritability of the cortical motor centers corresponding to the amount of bromid given to the dog, but no change in the irritability to the electric current in the subcortical white substance. Binswinger claims it is especially assimilated by the tissues rich in phosphorous, as in the brain containing lecithin and other nervous tissues. It may cause the person to become irritable, morose, depressed and even homicidal. Larger doses for some time may produce a mental state in which the patient is dull, expressionless, very drowsy and even stuporous. If aroused, he soon falls into the same state of sleep. Often an alteration in perception, memory, reason, and judgment can be noticed early. The special senses may be much disturbed, as some diminution in the acuteness of vision, marked impairment of hearing, taste and smell. Tactile and pain sensation is found much benumbed. Speech may become slow, retarded or confused. The defect could be attributed to the toxic effect on cerebration or on the more peripheral organs of speech.

Several cases of well-defined psychoses have been observed. The term bromomania has been used for a con-

dition with severe ideomotor and abnormal sensory activities. Binswanger describes a case with maniacal rage produced by 8 gm. of a bromid a day which disappeared after a reduction of dosage to 5 gm. daily.

CASE REPORTS.

Psychic Disturbances.—A group of 27 cases of bromism of various types has been carefully observed in the Kansas State Hospital for Epileptics, of which three patients gave evidence of psychic disturbances, one having a mania without any of the other toxic symptoms. Following is a short report of these three cases:

CASE 12.*—Male, aged 37, duration of epilepsy 5 years. Seizures had always been of the *grand mal* type, 1 to 5 a month being recorded. His physical condition had remained quite good. There was a little impairment of judgment and reason, but his mental faculties remained fairly active.

He was given .65 gm. potassium bromid two months, 1.25 gm. two months and 2 gm. two months, and tapered off on .65 gm. of a mixture of sodium, potassium, and ammonium bromid one month t.i.d. Toxic symptoms were observed during the fifth month of treatment and slowly increased in severity until the complete withdrawal of the drug. A few papules and pustules appeared on the face and neck. A mild gastritis with coated tongue and constipation became annoying. A marked irritability and mental depression developed which soon disappeared after the cessation of the bromid treatment.

CASE 389.—Female, aged 44, duration of epilepsy, 15 years. She had been having from 17 to 30 *grand mal* seizures a month. A mild chronic organic cardiac disease was present. She was placed on .65 gm. sodium bromid t. i. d. one month and increased to 1.25 gm. for a period of three months. After a time an increased mental irritability was very much in evidence. A finger infection with suppuration was followed by an indolent ulcer at the infective atrium which remained stationary for two weeks, but rapidly repaired soon after the patient was taken off the bromid. A slight acne did appear on the face and forehead.

CASE 262.—Female, aged 53, duration of epilepsy, 31 years, had been having from 2 to 12 *grand mal* seizures a month. There was a mild incomplete dementia, otherwise her mind was quite active. She was quiet, orderly, industrious and performed considerable labor. A few stigmata of degeneracy were present.

Patient was given .65 gm. potassium bromid t. i. d. which was discontinued at the end of the fourth week owing to the occurrence of an acute mania of two weeks' duration. The mania was characterized by numerous vivid hallucinations and delusions chiefly bearing on religious ideas. There was a pronounced insomnia. A marked motor agitation and destructive tendencies were present. The second attack of mania occurred seven months later after being on .65 gm. sodium bromid t. i. d. for six weeks. This was very similar to the first, both in character and duration.

Her mental organization having some defects may explain the unusual toxic effects in this case. She has been in the institution 19 months and has had no psychic alterations other than the two described. Great care must be exercised in attributing a cause for psychoses such as seen in the above case, as mental storms and manias of different severity and duration are often observed in the epileptic. In our opinion, this patient's psychic disturbances were attributable directly in each instance to very small doses of a bromid. No seizures occurred during these mental disturbances.

Bromid Acne.—We now come to the skin eruptions in which the well-known bromid acne is seen most frequently. A wide range of dosage will cause this toxic manifestation. An idiosyncrasy to very small doses is possible. The typical eruptive lesions appear firstly on the face and forehead, a few at a time in slow succession, distributed irregularly. The lesion is first noticed as an elevated, indurated papule having a diameter of 1 to 10 mm., with a base surrounded by a small reddened area. As a rule, itching is entirely absent. Ordinarily discrete, a severe case may present confluent areas. At or near the summit there soon develops in most of the papules one or more minute abscesses which, increasing in size, show externally as a yellow point. This may break down with small hemorrhages and crusting. In the large or confluent ones of the more severe type, ulceration may result. The pustulation is caused by several varieties of bacteria normally inhabiting the skin and its glandular ducts. The much reduced tissue vitality likewise admits of some of the more severe pathologic changes, among them a rarely reported secondary cellulitis. A fully developed bromid acne is located on the face, forehead, scalp, neck, shoulders, back, chest, proximal arm and rarely on other areas or the entire body. It must be borne in mind that an acne might possibly not appear until a few days and even weeks after the withdrawal of the drug. Other possible lesions given by dermatologists are erythema, urticaria, vesicles, papillomas, nodules, papulo-pustules, eczema and bullæ.

Twenty-four of our group of twenty-seven cases had a bromid acne and nine had this as the only symptom of intoxication. All these cases had a mild eruption observed early, thus allowing the prevention of more severe manifestations. Following are two unusual ones, the second case being an especially rare and interesting type of a skin eruption.

CASE 439.—Female, aged 28, duration of epilepsy, 1 year. From 0 to 3 *grand mal* seizures a month have been recorded. With the exception of a mild uterine disorder, her physical condition was good. Periodic mild manias with exalted ideas occur occasionally.

She was given .65 gm. sodium bromid t. i. d. six weeks. On the fifth week a bromid acne developed on the face and forehead, a few days later complicated with several small ulcers. Fowler's solution was used to combat the skin trouble with negative results. The ulcers and acne were slow to disappear.

This case has been cited to demonstrate a rapidly developing toxic effect from the use of a very small amount of a bromid over a short period.

CASE 170.—Male, aged 18, duration of epilepsy, 6 years.

Patient has had from 4 to 8 *petit mal* seizures a month. Physical condition was good. His mind remained active with a very little diminution in mental power.

He was placed on 1.25 gm. of a mixture of equal parts sodium, potassium and ammonium bromid t. i. d. one month, at the end of which period the dosage was reduced to .65 gm. t. i. d. for two weeks and then discontinued. During the third week of treatment a few small ulcers developed on the legs. These had the same appearance as the lesions observed at the time of the patient's admission and will presently be described. The ulcers healed shortly after withdrawing the bromid mixture. The treatment had no effect on the number or severity of his seizures.

At the time of his admission this patient presented a group of peculiar lesions of the integument of both legs; 22 distinct lesions were confined to the skin from the ankle to the middle thigh, chiefly over or near the lower two-thirds of the tibia. Each ulcer was from 1 to 6 cm. in diameter, with almost no inflammatory area surrounding it, and covered with a rough, dry crust of a dirty gray color whose thickness in several would have measured 7 or 8 mm. The patient stated that he had had the lesions for 6 months, during which time they had remained about the same. That two weeks before their appearance he had begun to take one tablespoonful of a

* The numbers are the filing case numbers of the patients in the hospital.

nostrum, "Dr. Grant's Cure for Epilepsy," which he discontinued at the end of the fourth week. The lesions healed in four weeks after coming under our care, leaving brown pigmented scars of low vitality. At the time of admission this boy's eruption was thought to be from the combined action of a bromid and other drugs in the nostrum. When we produced a beginning of the same skin trouble after a few weeks on a bromid, there was no doubt as to the cause.

Some work has been done on the histopathology of the bromid acne lesion. The process is especially active at or near the blood vessels, hair and sebaceous follicles and sweat glands. There is an active hyperemia of the corium, especially in the neighborhood of the papillæ, with an exudation of erythrocytes and leucocytes. Minute abscesses appear in the vicinity of the hair follicles and sebaceous glands. Bacterial zymotic liquefaction of the walls between the minute abscesses forms larger ones resulting in the pustules. The cause and *modus operandi* have not been fully or generally accepted. Among the theories advanced, the one most plausible and best supported is the neurotic. This well explains the wide difference of susceptibility to the bromids. The reflexes may be on the vasomotor centers or peripheral nerves.

Mucous Affection.—A coated tongue with fetid breath is frequently present, usually with some gastrointestinal derangement. The mucosa of the mouth and pharynx may be reddened and swollen, possibly complicated with a follicular angina or acute parotitis. Most of the bromids are more or less irritating to the stomach mucosa; especially is this true of potassium bromid. The secretion of pepsin and hydrochloric acid is decreased, perhaps largely accounted for by the depressed reflex action. Gastric motility is decreased. The continued use of the bromid causes a diminution in the pancreatic, biliary and intestinal secretions. This, with the lessened motility, explains the increased tendency to obstipation which is so frequent a concomitant of epilepsy. The earliest symptoms of bromism are not infrequently referable to the stomach.

Ten of our group of 27 cases gave evidence of more or less stomach trouble with the other toxic symptoms. The following case illustrates one with no other symptoms of intoxication, except those referable to the stomach.

Case 265.—Female, aged 28, duration of epilepsy, 14 years. Patient had been having 2 to 3 *grand mal* seizures a week. A mild incomplete dementia was present with periodic short attacks of mania. Physical condition was good.

She was given 1.25 gm. potassium bromid t. i. d. 3 months and increased to 2 gm. for a period of 6 months, at the end of which period it was slowly withdrawn. Sodium phospate was now administered for a short time. After 8 months of this treatment an acute gastritis with indigestion and epigastric pains was noted. There was also a general ill feeling. At no time was there evidence of any trouble with the skin which is very fair and smooth. Nothing gave any relief until we ceased giving the drug. The bromids allowed this patient a period of 7 months without seizures and with a marked mental improvement so often observed in epileptic remissions.

Cardiac Trouble.—Cardiac or respiratory troubles may occur or be augmented. The literature gives some deaths from heart diseases and asphyxia due to excessive use of the drug. The potassium salt is one of the most depressant to the cardiac muscles.

The bromids have a well-marked cumulative action and their elimination is much slower than assimilation. Binswager reports an experiment by Laudenheimer giving 10 gm. sodium bromid daily for eight consecutive days, during which period only 35 gm. were eliminated. This shows an accumulation of more than one-half.

Subnormal Tissue Repair.—In many cases on continuous bromid treatment it will be noticed that tissue repair is below normal. Simple or contused wounds do not heal so rapidly when the patient is taking the drug. Chronic ulcers refusing to heal will do so in a short time after withdrawal of the bromid. These statements are substantiated by the following cases:

Case 272.—Female, aged 46, duration of epilepsy, 33 years. Patient had been having from 6 to 23 *grand mal* seizures a month. Her physical condition was quite good. A mild incomplete dementia was present.

She was given .65 gm. potassium bromid t. i. d. for 5 months A very mild acne appeared on the face during the fourth month of treatment. A pandactylitis followed a staphylococcus infection of the finger a short time after she had begun the bromid treatment. During a much protracted period of healing it was necessary to amputate the distal phalanx and the articular portion of the adjoining one. A low grade suppuration of the stump continued, but soon healed rapidly after she was taken off the bromid.

Case 326.—Male, aged 17, duration of epilepsy, [illegible] years. Physical condition was fairly good. He was a high grade imbecile.

He was given 1.25 gm. of sodium bromid t. i. d. for 5 months. This caused a reduction in the number of seizures. On the fifth month a mild bromid acne appeared on the face and upper trunk. About the same time a mild gastritis with a furred tongue and epigastric pains developed. Paresthesias and pains were described in both legs. A slight decrease in mental power was noted. An indolent ulcer followed a mild trauma to an old extensive cicatrix over the tibia. This had refused to heal but rapidly did so after the bromid was withdrawn. He was placed on a diuretic and a saline mineral water a short time before the bromid treatment was stopped.

Case 389, which has been narrated, shows another indolent ulcer rapidly repairing after we ceased giving the bromid.

The treatment of bromism consists of prophylaxis, withdrawal or reduction in the dosage of the drug, when the condition is established, and attention to the individual organs giving evidence of intoxication. In epilepsy the individual must be observed and treated according to indications. In a large number of epileptics the bromids are not to be used; in some with certain precautions. When there is a tendency to acne, frequent plain baths with soap and water are valuable. Fowler's solution may be given to reduce the possibility of acne though it often fails. It can be prescribed with a simple or aromatic elixir of bromid. For the constipation, cascara sagrada may be given in any bromid solution. When a gastritis or generally ill-defined symptoms occur the drug must be quickly withdrawn. Sodium phosphate and diuretics may then be given and an easily digested diet prescribed. Any developing psychosis is an indication for an immediate cessation of the drugging.

SUMMARY.

1. Often the bromids are given in excessive doses continuously over a long period in epilepsy and some other diseases. In many cases they are contraindicated or the patient is not carefully enough observed during the course of treatment.

2. After a few weeks cellular resistance is lowered, the degree depending on the individual susceptibility and amount of drugging.

3. The great importance of an early detection of the mild beginning state of bromism is apparent.

4. Though the skin often gives the first evidence, other organs may be simultaneously affected and some

few show the first isolated symptoms of bromism. For the future welfare of the individual, the gastrointestinal and mental derangements from the injudicious use of the bromids are of greater importance than skin lesions.

TYPES OF INSOMNIA AND TREATMENT WITHOUT DRUGS.

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Conspicuous among the disorders which play a prominent rôle in undermining our health and destroying our peace of mind are the various types of insomnia and pathologic sleep.

Physiologic sleep is simply a period of resting for all our organs, their functions being markedly lowered, central control diminished, and changes of reconstruction occurring in our nervous equilibrium. The nervous patient sleeps badly, but the nature of the insomnia varies in many ways. Some go to sleep the moment they lie down, only to awake an hour or two later, to toss throughout the night, and possibly to doze off at the hour when they should awake. Others sleep well till the first peep of day, rising ill-humored and cross, having lost two of their nine hours' sleep. Some patients apparently never sleep and remain calm and comfortable the entire night, get very restless and provoked, get up and walk around the room or take a bath or read a book, but all to no avail, till 2 or 3 o'clock in the morning, when they fall asleep from sheer exhaustion. Some go to bed good natured, but gradually take an extremely pessimistic view of life, and remain in this psychic discomfort for many hours. Others go to sleep, but are disturbed by dreams and nightmares and have a constantly agitated sleep the entire night.

PATHOGENESIS OF INSOMNIA.

What may we rationally consider the pathogenesis of insomnia and these varied mental states which give rise to the disturbing dreams?

Insomnia is a continuation of the molecular vibration which is normal during cerebral activity, the result of too vivid sensorial impressions. It may be a sign of disturbed nutrition and alterations in the cerebral circulation. It follows naturally that any intoxication may sufficiently irritate and excite our "sleeping centers" to the extent that sleep is impossible, and set in discordant vibration the delicate cells in our frontal lobes which preside over and control our acts and thoughts.

The occurrence of painful and disturbing dreams may certainly be considered an abnormal mental condition, and a symptom which should attract our attention and be of distinct value in estimating the nature of the nervous trouble from which the patient may be suffering. These distressing dreams are generally the result of fatigue and the continuance of unhappy mental states which are merged into the sleeping state. They do not depend on our mental condition at bedtime, but on some unpleasant feature or worry, which may have been in our mind days or weeks previous. Painful and distressing dreams accompanied by a restless and unhappy sleep constitute not infrequently one of the very early symptoms in neurasthenia of the cerebral type. Dreams, good or bad, are merely the manifestation of the working of the subconscious mind. Memory being an adjunct of this subconscious mind, dreams are not confined necessarily to events of recent date. These dream-like states may so frighten the patient that recourse to normal sleep is impossible.

TYPES OF INSOMNIA.

There are several varieties or types of insomnia:

1. The melancholy type of insomnia is often met in many different degrees. Here the patient is apprehensive of some calamity, is fearful of impending danger, and in a vague sort of way believes that he has been indiscreet in the past and is now just beginning to pay the penalty. He is possessed of preoccupying obsessions which revolve in his mind and cause wakeful visions of unpleasant scenes. It is observed more especially in persons having a neurasthenic mentality and who react quickly to their own autosuggestions.

2. Another and rarer type is made up of a class of individuals, usually literary in their tastes, who will quickly go to sleep and rest well for a few hours and often awaken with a start as from a dream and remain awake the remainder of the night, lying peaceful and quiet, often with closed eyes, endeavoring to settle problems of different kinds, or initiating ideas for some future event.

3. There is still another class, formed of people who have periods of from four to six weeks in which they never sleep, but simply lie awake during the entire night. They are not happy, nor can they tell what troubles them. It is an indefinable something which simply shuts out all sleep. This, in a measure, is analogous to periodic insanity and its cure is attended with more than ordinary difficulty. It is almost always seen in persons possessing a marked neuropathic personality and in individuals of more than ordinary mental training.

TREATMENT WITHOUT DRUGS.

In the treatment of these psychoses, for truly such they are, one must remember that drugs and physical measures are of very small utility when they are given with the idea that a permanent cure will follow. They may relieve temporarily, but their continued use has in many ways been most harmful and may leave the patient in the deplorable condition of chronic insomnia. Many of the acute psychoses are markedly relieved by hydrotherapy—the hot wet sheet in particular—and even the hydrobromate of hyoscin has its place; but to cure this chronic sleepless patient one must be cognizant of the underlying cause, and not only know what it is but be able to counteract and to annul the offending factor.

To be in close touch and to have the entire confidence of the patient, to have him feel that you are the master of the situation, is imperative. But this must not be undertaken in any careless or flippant way. Intelligent explanation of the nature and cause of his worry and fear, of the value of kind and noble thoughts and the complete relaxation of body and soul, must be made seriously and with conviction. If the physician does not believe this himself, it is useless merely to repeat the instructions. One can never convey conviction to a patient without its being deeply rooted in himself. On careful questioning we often find definite fears or phobias of different degrees and intensity. Of all the mental states, fear is the most pernicious. The patient dreads the night, he knows he can not sleep, he says so to himself a thousand times, naturally his oft-repeated suggestion is effective and he does not sleep. This autosuggestion is innocently and unconsciously maintained and is a prolific cause for inability to find refreshing sleep.

The treatment in such cases is most simple, is, indeed, so simple that most of us scorn to use it. The remedy is counter-suggestion, a convincing assurance that sleep will surely come. Teach the patient a wholesome philosophy, which consists in taking hold of things by the right end, and sleep will follow, as night the day.

In starting the treatment, to secure additional confidence one may suggest a warm foot bath on retiring, or a glass of hot milk, or some slight diversion, but if continued the patient forms a bad habit, and soon comes to require all these little extras which, in a measure, seem to lessen the effect of the direct suggestion.

The citation of cases illustrative of some different types of insomnia, together with their treatment, will be self-explanatory.

Case 1.—Dr. C., a retired army officer, was referred to me by Dr. Swift. This patient had a most obstinate case of insomnia, the sleeplessness being a symptom of the disease for which he had been retired three years previously, viz., neurasthenia. He had been treated for this by many physicians, and at the time I first saw him was taking dram doses of sulphonal, which sometimes gave him three hours sleep. His wife told me with tears in her eyes that he had taken "tons of hypnotics, and had tried everything, but was only getting worse and becoming a physical wreck."

Treatment.—I put him in a hospital away from his wife and children, gave him no drugs whatever, and within a period of less than five weeks he was sleeping eight hours each night, and studying many hours each day, preparing for his examination before a state board. For ten days his only treatment consisted in daily visits to my office, where he was assured that each night he would sleep better than the night before, and would soon be able to return to his home. My instructions were to go to bed at 9 o'clock, to shut the eyes, and to play he was asleep, and though he felt wideawake, to lie perfectly still by force of will power. Each day or two he admitted that he was getting control over his insomnia. He used no hypnotics.

Case 2.—W. H. W. was referred to me by Dr. Lobingier. He suffered from insomnia to the extent that he had to give up a large law practice in an eastern state and come to this climate, hoping he might improve. Mr. W. had certain phobias and fixed ideas regarding his mental state, which were exceedingly difficult to overcome. He would lie awake two-thirds of the night, endeavoring to go to sleep, but all the time he would say to himself, "It's no use; I can't go to sleep." In other words he could not go to sleep because he said he could not; a typical case of autosuggestion. He had at times a little palpitation. He had been in this condition for a period of about five years, and had recently had "a course" of christian science.

Treatment.—An improvement was noticed in his insomnia as soon as he felt convinced that he had no organic heart trouble, the fear of which had caused him no small amount of worry. I wrote out the following sentence on a slip of paper, with instructions to read it many times during the day and evening: "I'm feeling fine. I'm going to get well. I'm going to sleep sound all night long." No other treatment was used except at an occasional visit at my office I would assure him that he looked fine and would soon return to his work all well. He improved very slowly for the first four weeks. Three times I had to renew his prescriptions, which he considered a joke, when one day he told me he was much better, that his fears has disappeared and sleep was normal.

Case 3.—Mrs. M., aged 50, came to me from Long Beach for an unusual case of insomnia. She said that she never slept an hour in her life that she knew of since the age of 21, never suffered any discomfort therefrom, and merely came to me partly from curiosity to see how it would seem to sleep normally. I inquired of her husband (not in her presence), a very intelligent retired banker, regarding his wife's statement, and he surprised me by saying during the twenty-three years he had been married he had never seen his wife asleep.

Treatment.—In this case I had no obsessions or bad habits to correct, and had to rely on post-hypnotic suggestion. I placed her in a moderate degree of hypnosis, while sitting in a rocking-chair, and repeated over and over that at 9 o'clock that evening she would feel very sleepy; that she would go to bed and go to sleep, and sleep soundly all night, and the following night, and that in two days she would come to my office at 4 o'clock. At the appointed time the lady appeared, and on asking her why she came at 4 instead of 2, as she did the first time, she said she did not know, only that something told her to come at that hour. She further said that she went to bed and slept soundly six hours the first night, beginning at 9 o'clock, and the next night she slept eight hours. For five weeks she came once a week, as she said jokingly, for a little nap, and during this period, and since, she sleeps from six to nine hours each night.

The rational treatment of any mental disorder must, of necessity, be a mental or suggestive treatment, and that any treatment which entirely leaves out this important factor must assuredly be a failure. Whether intentionally or not, we all use a certain amount of suggestion, and it is this factor which gives us success, very often when we insist that this is due to the favorite drug.

The majority of insomnias are distinctly of mental origin, and their successful treatment must be through avenues directed to overcoming false ideas and replacing fear with healthful, quieting thought and the removal of irritants which directly or indirectly affect the minds of the patients.

THE NATIONAL FORMULARY.

ITS ATTITUDE TO PHARMACEUTICAL PROPRIETARIES.*

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In the address of a pharmacist to physicians it is unavoidable that his professional bias shall in a greater or less degree dictate the thoughts he designs to express. The subject of my address, however, is one on which we as pharmacists and you as physicians meet on common ground; it is a subject on which we are mutually and equally interested, and one which we must carefully consider and clearly understand if we wish, in some degree at least, to ameliorate conditions which have wellnigh succeeded in annihilating professional pharmacy, without a compensating benefit to the profession of medicine. The defenders of these untoward conditions tell us that these are the inevitable results of modern progress and invention; that the development of pharmacy has gone hand in hand with the advance in medicine; and they even go so far as to claim that only by this development of pharmacy the advance in modern therapy has bcome possible. I should be loth to admit that I have grown too old to appreciate the modern advances that have been made in both domains; but it is a debatable question in what direction we can concede that a true advance has been made in that of pharmacy. Surely not professionally; for, with all proper respect for the educational influence of colleges of pharmacy, the supervision of boards of pharmacy and the attempts by legal enactments to elevate the standard of pharmacy, the lamentable fact remains that pharmacy as a profession is degenerating.

It is not my purpose to discuss this question, however, in all its bearings, but to confine my observations in a

* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

general way to the extent in which the modern exploitation of pharmaceutical proprietaries, meaning by these "pharmaceutical preparations offered to the medical profession under fanciful names," may be held responsible in creating existing conditions, and, particularly, to define the attitude of the National Formulary toward this class of preparations.

PLACE OF THE NATIONAL FORMULARY.

In the pursuit of his responsible calling, the well-equipped pharmacist is required to keep in stock, and to preserve in useful condition, an innumerable variety of simple drugs and chemicals, in order to meet the demand that may be legitimately made on the call of the physician. Many of these simples being in a crude state, or otherwise not suitable for direct use, are made available by converting them into preparations, be it a powder or pill, a solution or infusion, a syrup or a tincture, a liniment or an ointment; or they may be so bulky, or so loaded with inert matter, as to admit of concentration into extracts or fluid extracts; and these simple preparations, again, may be compounded with other drugs or chemicals, as may be dictated by experience, either for the purpose of modifying or increasing their potency, or to render them more acceptable or more palatable on administration. It is obvious that successful medication becomes possible only if these drugs, chemicals and preparations conform to an agreed standard; hence the adoption of a code, known as the Pharmacopeia. But a pharmacopeia is of necessity conservative and eclectic; it can only admit and define standards for well-tried remedies that are prescribed with sufficient frequency to merit a permanent place in the code; while untried remedies, though possessing more or less popularity, are properly excluded until experience shall justify a demand for admission. This has, under each revison of the Pharmacopeia, excluded an ever-increasing number of preparations, both simple and "poly-pharmacal," which have been persistently prescribed, notwithstanding the uncertainty of their composition and the apparent differences existing between some of those supplied under identical names.

While the necessity of these "poly-pharmacal" preparations is debatable, it is clearly desirable to establish uniformity in formulas for all medicinal preparations likely to be prescribed by physicians, so that they may arrive at a definite knowledge of composition and a reasonable interpretation of possible effect. Having on previous occasions discussed the character and objects of the National Formulary in papers read before this section in 1893 and 1898, it is scarcely necessary for me to repeat that this work was issued by the American Pharmaceutical Association with the primary object of establishing an authoritative standard for a large number of remedies "which are more or less frequently prescribed by physicians, but which are not recognized by the Pharmacopeia, either because they were not deemed by the revisers to be of sufficient importance to be included in the official work, or because they originated subsequently to the appearance of the work, or for other reasons." This definition did not contemplate the consideration of preparations of a merely ephemeral nature, and particularly not such of a proprietary character, but simply such that were made by pharmacists in all parts of our country under the same title, but often different formulas and in varying strengths. Under these conditions it had become the practice to designate in prescriptions particular brands of what was considered one and the same preparation, and the evils resulting from this practice were so evident and so far-reaching that there is now no necessity to say anything in vindication of the National Formulary. It suffices to mention that since the appearance of this work the untoward existing conditions were, to some extent at least, palliated. Many practitioners have adopted the designation "N. F." when prescribing preparations for which formulas are given in the National Formulary, and the habit is growing.

ATTITUDE TO PREPARATIONS WITH FANCIFUL NAMES.

It is very different, however, with another class of preparations, simple as well as "poly-pharmacal," which are exploited under coined names, and which, indeed, were apparently called into life by the inroads made by the National Formulary on their successful exploitation under more specific titles. Leaving out of consideration the modern synthetics, which are a host in themselves, and are taken care of by the Council on Pharmacy and Chemistry, there is a large number of preparations, exploited under brief fanciful titles, which consist of simple drugs or chemicals, such as are on the shelves of every pharmacy, and uniformly obtainable in a condition of acceptable purity, in the form of pills, capsules, tablets or powder; others that are simply solutions of one or more salts, for which exceptionable purity is claimed; and all of these claimed to be products resulting from the application of prolonged investigation, diligent study or unusual facilities and skill.

Then, again, under similarly coined titles, the attention of physicians is invited to pharmaceutical compounds of a more intricate nature, compounded from drugs of "rare quality" or representing the "essential principles" of this, that and the other drug—the quantities, if given, pertaining to the drug, but not to the "essential principle" involved—the development of which has required years of study, or which are the outcome of vast experience, not to speak of occult divination, and so on *ad nauseam*. All these claims are of course subservient to the pharmacologic import of the article exploited, which is rarely "just as good," but always superior, in one direction or the other, to other medicaments that have stood the test of time in similar cases; the literature accompanying these trade-named "pharmaceutical proprietaries" teeming with fulsome and extravagant claims, so preposterous, as to leave it doubtful what is the more amazing, the unparalleled effrontery of the exploiter, or his confidence in the gullibility of the average physician.

It would be passing strange if among the many trade-named "pharmaceutical proprietaries" there were not some of intrinsic value as remedial agents, and certainly there are others which, whatever may be the estimate of their worth, are prescribed with sufficient frequency to call for representation in the National Formulary, in a form in which such may be intelligently tested. While, therefore, the first edition of the Formulary was comparatively free from formulas representing trade-named preparations, a number of such have been admitted into the revised editions that have since been made, without, however, referring in any way to the trade-named title. In this respect the compilers of the work have the precept of the revisers of the Pharmacopeia, who, in the recent edition,[1] have included formulas for a number of preparations which have been heretofore, and still are being, exploited under fanciful names. Indeed, some of these have been appropriated either from the text of

1. United States Pharmacopeia, viii, 1900.

the National Formulary, or from the text of the reports in which they were proposed for admission into that work. The committee on National Formulary has been criticised in some quarters, probably by interested parties, for having constructed and included formulas for certain trade-named preparations. On the grounds indicated, this committee will doubtless not be discouraged from so appropriating or constructing formulas for any preparation, so long as the formula is not vested in private ownership by right of patent, if the frequency of its use shall justify such action.

Initially, I intimated that I can no longer count myself among the young in my profession. How I feel in that respect is entirely another thing. But whether old in years or young in mind, it is to me both a gratification and a consolation to think of a Squibb, of a Procter, as types of true unselfishness; of men whose trend and endeavor has been to disseminate the knowledge gained by experience and study in the domain of pharmacy, not in promotion of personal gain, or for the benefit of individuals, but for the elevation of pharmacy to a standard of excellence that shall creditably meet all demands that may justly be made by those engaged in the responsible profession of medicine. And to these I would say, it is not the man who presumes to do better than others, but rather the man who assumes to do as well as can be done by others, who merits your confidence.

Clinical Notes

TREATMENT OF GONORRHEA IN THE MALE.

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In the treatment of gonorrhea we must recognize two or three important facts and govern our treatment accordingly, otherwise we will find it well nigh impossible to complete a cure at all.

First.—Gonorrhea is caused by the presence of the gonococci, which set up a rather violent inflammation.

Second.—The inflammation begins just within the meatus urinarius and extends, if left without proper treatment, rapidly into the deep urethra.

Recognizing these two important factors, the rational treatment of gonorrhea is to begin treatment at the earliest possible moment, and to commence at once with local applications, by injection of a remedy that will kill, or at least inhibit the development of the gonococci, and at the same time heal and soothe the inflamed membrane. Many high in authority advise doing practically nothing until the acute symptoms have subsided, which usually takes from two to three weeks. They advise bland diet, alkalies internally, large draughts of water, gentle purgation, and rest until the disease has passed the acute stage and severer symptoms have subsided, then begin local treatment. This plan of treatment can not be too severely condemned. It is irrational and unscientific, for in every case when the acute stage has subsided the entire spongy and membranous urethra is usually involved and the task of curing the patient is far more formidable than if the disease had been grasped at the beginning of the attack and treated in the same rational and common-sense manner that we do other diseases.

AUTHOR'S METHOD OF TREATMENT.

After a considerable experience in the treatment of gonorrhea, my object has been to give an injection that will not irritate or pain the already inflamed mucous membrane, and, while no single prescription will do for every case, the solution of iodid and chlorid of zinc comes nearer meeting our desires than any other remedy. It should never be used in sufficient quantity to produce pain, but just strong enough to soothe the inflamed membrane, and it will at the same time stop the development of the gonococci.

Every physician knows, or at least should know, that the silver salts are gonococcocides. Nitrate of silver will thoroughly and completely destroy them, but the objections to its use are its irritating properties and the consequent pain it produces. Weak solutions kill gonococci and at the same time are only slightly irritating. The ideal treatment, and one which if it could be carried out would result in many more cures—and many of them would be complete in from two to three weeks—would be to keep the patient in bed, keep his bowels open, give him bland diet, plenty of alkaline water to drink and inject into the urethra silver nitrate or iodid and chlorid of zinc.

This plan of treatment, however, can only be carried out in the army or navy where the patient must obey his physician. It is useless to tell a business man to lie down for a gonorrhea, for he will not do it; consequently we must treat him, allowing him at the same time to attend to his business.

The idea that remedies given internally have a specific influence on this disease is simply a myth. Internal medication should only be given for the purpose of rendering the urine less acid and more copious, thereby less irritating. Alcoholics should be absolutely and positively forbidden, the diet should be almost, if not entirely, free from meat and highly seasoned food, and an injection should be begun at once, preferably iodid and chlorid of zinc, next permanganate of potassium or weak solutions of silver nitrate, 1 to 5000.

Often a failure is made by not instructing the patient how to inject properly and with the proper syringe. The syringe should hold at least three drams, its nozzle should be half an inch long and perfectly round at the end. The penis should be held upward—parallel with the abdomen. Drop the nozzle of the syringe into the urethra, up to the barrel, bring it gently against the upper wall of the urethra and hold the meatus underneath so as to close it tightly around the syringe nozzle; then pull the penis upward until it is sufficiently on the stretch to smooth the folds in the lining membrane; then push the piston with sufficient force and suddenness to throw the injection well within and slightly to distend the urethra. Then withdraw the syringe, closing meatus by compressing it between the forefinger and thumb, holding medicine in contact with membrane for at least five minutes, better ten.

My usual prescription is:

R.	Iodidi zinci	gr. xv	1
	Chloridi zinci	gr. i	06
	Aquæ destillatæ	f℥vi	180
M.	Sig.: Use three times a day as injection.		

CONCLUSION.

In conclusion I would urge a few considerations which are absolutely necessary for the successful treatment of gonorrhea.

First.—Educate your patients to consult a competent physician as early as possible after suspecting this disease. Delay is hazardous.

Second.—The physician should at once proceed to remove the cause, namely, the gonococci, which can only

be done by applying a gonococcocide directly to the germ and retaining it there for a sufficient length of time to get its full effect.

Third.—Never wait until acute symptoms subside, for if you do you will generally have to treat a urethral stricture before the resultant gleet disappears.

SUCCESSFUL END-TO-END ANASTOMOSIS AFTER A PARTIAL DISEMBOWELMENT IN A RUNAWAY ACCIDENT.

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Cases like the one reported below are of sufficiently frequent occurrence to occasion no surprise, and one would hardly be justified in asking for space for their publication were it not for two reasons: That some use for the report may be had for statistical purposes, and that a recovery from so serious an accident under such circumstances should encourage the general practitioner, or the country doctor, who can not immediately summon to his assistance an experienced surgeon, to proceed himself with the operation without delay.

Common sense and the effect of wide reaching will stand any man in good stead in such grave emergencies, and if the practitioner has at his command a good emergency armamentarium, which he keeps properly stocked and in good condition, he can always remember that an ordinarily well kept country home is not apt to be infected with virulent micro-organisms. Indeed, if the operator does not bring infection with him, he will often be surprised at the beautiful results he will obtain. In grave emergency abdominal operations I have a number of times covered the intestines with clean towels wrung from hot water in the kitchen by women of the household, and had as gratifying results as any living man could wish for.

All this is not to say that I in any way desire to minimize the necessity for careful preparation and absolute asepsis when it is possible to have them; but to show that these conditions may obtain where clean living is the habit of the patient and the doctor does not carry infection with him from case to case.

History.—B., aged 28, a healthy, well-developed man, was driving through a busy street when his horse became frightened, and, running away, dashed into another horse coming from the opposite direction, the impact being sufficient to raise the latter animal and to deposit it with its forehoofs in the patient's vehicle; the shaft meanwhile plunging into his abdomen, in some way seizing the ileum and withdrawing it, together with several feet of the intestines, outside the abdominal cavity, and tearing away a complete section of the gut.

Although seriously injured and knowing, as he expressed it himself, "that his trousers were full of intestines," he walked unaided to a nearby store, from whence he was immediately removed to his home in a carriage. The attending physician, who arrived there with him, placed him in bed and began the application of towels wrung out from hot water.

Operation.—I arrived with an assistant about forty-five minutes after the accident and decided to operate without removing the patient to the hospital. Therefore, without taking him from the bed in which he lay, or changing his position, he was chloroformed and the extruded intestines were drenched with a hot saline solution. Examination revealed the fact that the shaft had penetrated the skin and fascia of the right thigh about two inches below Poupart's ligament, and somewhat toward the outer aspect thereof. Thence, ranging upward, it passed over Poupart's ligament, tearing loose a flap of skin and fascia about six inches wide, entering the abdominal cavity about the internal ring. The opening into the abdomen was fortunately not large, and was plugged snugly with the intestines, thus permitting the cleansing of the extruded portions with solution without soiling the peritoneal cavity.

After cleansing the intestines carefully, rubber covered clamps were attached to each of the severed ends about six inches from their openings, and the interior of each severed and wiped carefully with gauze and cleansed with saline solution. The severed ends were now carefully trimmed with scissors, the sections of a Murphy button inserted, fastened in the usual way, and snapped together. Thereafter, following the insertion of a number of Lembert silk sutures, a running suture of No. 1 sterilized catgut was passed entirely around the gut, further turning in the peritoneal surfaces. Rents in the mesentery were now repaired with interrupted gut sutures, the extruded intestines again douched with salt solution and returned to the abdominal cavity.

The patient did not vomit, either before or after the operation. Hemoglobin was 105 per cent. He did not suffer much pain, passed gas in forty-eight hours, and at the end of the third day complained because I would not allow him a beefsteak. The button passed on the twelfth day, after which, save for a little time required for granulation (the external wound having suppurated), the case presented no features of interest. He made a rapid recovery, and now, a year after the operation, is as active and as well as ever, riding horseback and doing much hard work on a ranch.

A CASE OF GENERAL ARGYRIA.

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LAUREL, NEB.

Argyria, once a very common form of intoxication, is now very rare. The first case was seen in 1791 by Schwediauer, and reported by Fourcroy. Early in the nineteenth century many cases were reported and the number increased toward the middle of the century on account of the extensive use of the metal in the treatment of epilepsy and tabes. The slaty pigmentation was frequently seen in the European hospitals and on postmortem tables. General argyria now is very rare, the only form of the pigmentation now seen being a local affection due to topical application to wounds, ulcers, etc., or to absorption of silver dust by workers in the metal. It is not so much the amount of the metal ingested that causes the pigmentation as it is the repeated taking of small doses over a long period of time. The only pathologic change found is the deposition of black granules in the rete mucosa layer of the skin. The chemical nature of this deposit is unknown. The pathogenesis seems to be a matter of dispute.

Patient.—A married woman, aged 69, residing on a farm, family history excellent.

Previous History.—For years the patient had been suffering from chronic stomach trouble. Five or six years ago, after consulting a specialist, she began taking some pills for the complaint and had had the prescription refilled often since then, as her stomach troubled her. She also gave an indefinite history of apparent attacks of paralysis (?), saying her legs would suddenly give out under her. No other illnesses of consequence were related.

Present Complaint.—About two and a half years ago members of the family began to notice that the skin of her face was changing color and was becoming a peculiar ashen hue. This kept growing in intensity up to the present time, spreading from the face to the neck and thorax below the breasts. She also complains of numbness and tingling, shooting, pricking pains in the fingers and toes, and some general weakness and malaise.

Examination.—The most striking feature of the woman's appearance was the deep slate-blue color of her face, which on closer examination proved to be in the skin itself, and hence could not be due to a cyanosis. The pigmentation was of irregular distribution; that is, it was more intense in some places, as for example, on the sides of the nose. It also in-

volved the conjunctivæ and the buccal mucous membranes. The slaty color extended all over the face, neck and thorax, fading out at the waist line, and involved the entire skin of the upper extremities. The patient's general nutrition was fairly good, although the family said she had lost some weight. The pupillary reflexes were normal; the knee jerks were somewhat exaggerated. There was some hyperesthesia of the extremities. The pulse was full, regular, and of rather increased tension. Respiration was normal, and lung findings were negative. The heart tones were pure.

Treatment.—The nitrate of silver preparation was ordered stopped. The treatment was directed to the general condition and consisted of tonics, nutritious mixed diet, fresh air, exercise and eliminatives. The patient's general health is good. For the neuralgic pains I have given cannabis indica and sodium bromid with good results. Since the withdrawal of the silver the pigmentation has remained practically unchanged. I have given no treatment for the conditions, as I know of none.

Inquiry of the druggist from whom the pills had been procured showed that the prescription called for nitrate of silver, fifteen grains, divided into seventy doses, which would make about one-fifth of a grain to a dose. The prescription had been refilled many times, so that it is impossible to estimate how much of the metal had been ingested. This cleared up the diagnosis of the condition, making it an unmistakable case of argyria.

MODIFICATION OF THE REESE URETHRAL IRRIGATOR.

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Surgeon to Out-Patients Carney Hospital, Instructor in Surgery and Assistant in Anatomy, Tufts Medical School.
BOSTON.

The instrument shown in the cut is modeled after the Reese urethral irrigator. Having broken several glass irrigators, it occurred to me that as the glass cup was the part most often broken, a detachable, soft-rubber cup would in a great measure lessen the liability to breakage. The instrument consists of a glass urethral irrigator, and a soft-rubber, detachable cup. The accompanying cut requires no explanation.

The advantages claimed for this modification are that it is less easily broken, is less expensive than one made wholly of glass, and the thickened rim of the cup prevents any spattering from the irrigation fluid. The cost is about one-half that of the glass irrigator.

A PACKET OF ASEPTIC MATERIALS FOR THE CARE OF THE NAVEL AND THE EYES OF THE NEW-BORN CHILD.*

BENJAMIN S. PENN, M.D.
HUMBOLDT, TENN.

The eyes and the navel are the two principal infection atria in the new-born child and the conscientious obstetrician realizes his responsibility by attending to these parts personally, instead of leaving them to the care of a nurse. At least 10 per cent. of the blindness of the world is caused by ophthalmia neonatorum, which might be prevented by the use of Credé's method of disinfection of the eyes.

After the eyes have been attended to, the physician cleanses the abdomen and cord as thoroughly as possible and covers them with an aseptic dressing. In thus scrupulously discharging his duties, the physician has the satisfaction of knowing that he is improving statistics with regard to the occurrence of omphalitis, tetanus and ophthalmia neonatorum.

With the assistance of Messrs. Seabury & Johnson—whom I wish to thank for their faithful attention to the details furnished them—I have designed a packet of sterilized materials for the care of the infant's eyes and navel which I believe will not only be a convenience to those who already exercise proper care in this matter, but will also be in a sense an educative factor for those who do not conform in this respect to modern methods.

It seems appropriate to include the materials for the treatment of the eyes with the navel dressings since, as a rule, the eyes require attention before the cord, and to have all articles needed in the care of the child placed compactly in an airtight container. This is certainly better than to carry the several articles in the obstetric bag; and especially is it a more certain way of providing for the silver solution.

This packet is designed to be ordered by the physician, with other requisites, to be obtained by the patient before her confinement, and is small enough to be conveniently carried in the obstetric bag for use in unexpected cases.

So far as I know, no other packet provides the materials for Credé's method and the sterile powder, which are both desirable in a packet of this kind; especially the powder, as it is impossible to obtain such powder in many places, though it should be obtainable at every drug store.

A slip of directions is enclosed in each packet, chiefly for the use of the nurse when the physician is too busily engaged with the mother to look after the child himself, and instructions are printed on the cover that the seal is not to be broken until so ordered by the physician.

Every dressing in the packet is sealed separately, so that it need not be exposed to the air until required for use.

CONTENTS OF PACKET.

The packet contains the following articles:

1. Two pledgets of sterile gauze for cleansing the eyes with boiled water.

2. One glass tube containing enough silver nitrate to make 2 c.c. of a 2 per cent. solution, on the addition of boiled water up to a mark on the side of the tube.

3. One glass tube containing enough boric acid to make 10 c.c. of a 4 per cent. solution, on the addition of boiled water up to a mark on the side of the tube, this solution to be used repeatedly in all cases for several days to prevent the irritation and mild conjunctivitis which might occur in any infant's eyes.

4. One glass dropper for making and using these solutions.

5. Two bichlorid of mercury tablets for making solution for disinfecting the cord and abdomen when that is indicated.

6. Three braided silk ligatures, 12 inches long, sterilized and sealed separately.

7. Two small glass tubes of sterilized umbilical powder designed to be bland, deodorant and mildly antiseptic; the formula for which is as follows: Boric acid, one part; bismuth subnitrate, 50 parts, and talc to make 100 parts.

8. One perforated gauze compress for first dressing; the cord is drawn through the perforation after being washed and having umbilical powder dusted freely around its base.

9. Another gauze compress, not perforated, which is laid over cord and first compress after the cord including the cut end has been dusted over with the remaining powder from the first tube.

10. A white flannel binder with necessary safety pins, to hold the above dressing in place. This dressing to remain if no complication arises, until the cord separates, when it is to be removed, the umbilicus cleansed again if necessary, and dusted over freely with the umbilical powder contained in the second tube.

11. A compress for second dressing, about two inches square by one-third of an inch thick, applied over the umbilicus.

12. Another binder which is also supplied with safety pins, and which holds the second dressing in place.

Of course the dressings may be applied in a somewhat different manner if so desired.

No priority is claimed for the recommendation of the dressings contained in this packet, but merely for their presence and arrangement in the packet.

Every dressing in the packet is absolutely sterile.

* Read before the Humboldt (Tenn.) Medical Society, July 17, 1906.

New and Non-Official Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NON-OFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(*Continued from page 1741.*)

SODIUM ICHTHYOL.

SODIUM ICHTHYOLSULPHONATE.

A derivative of ichthyol containing sodium instead of ammonium.

It is prepared by neutralising ichthyolsulphonic acid with solution of sodium hydroxide and evaporating the excess of water. It is a dark brown mass, more solid in consistency than ammonium ichthyol, otherwise having identical physical properties. It contains 15 per cent. of sulphur.

It is distinguished from ichthyol by not giving off ammonia on the addition of sodium hydroxide.

Actions, Uses and Dosage.—These are the same as those of ichthyol. Its firmer consistence makes it more suitable for pills.

Manufactured by the Ichthyol Co., Hamburg (Merck & Co., New York). German patent No. 107,223.

STOVAINE.

BENZOYL-ETHYL-DIMETHYLAMINOPROPANOL HYDROCHLORIDE.

Stovaine, $CH_3.C(C_2H_5)(O.CO.C_6H_5)CH_2.N.(CH_3)_2.HCl = C_{14}H_{22}O_2NCl$, is the hydrochloride of 1-dimethylamino-2-ethyl-2-propanol benzoyl ester.

It is prepared by causing a reaction of benzoyl chlorid on the α-dimethyl-amino-pentanol-5, which is itself the product of reaction of ethylmagnesium chloride on methylaminoacetone.

It crystallises in small, brilliant scales, which melt at 175° C. (347° F.). It is extremely soluble in water and easily in methyl alcohol and acetic ether but requires 5 parts of absolute alcohol for solution and is only slightly soluble in acetone. It is quite stable and its solutions may be sterilised at 115° C. (239° F.) without suffering decomposition.

The aqueous solution is slightly acid to litmus, neutral to methyl orange. It is precipitated by all the alkaloidal reagents and is decomposed by even very dilute alkalies.

It is incompatible with alkalies and all alkaloidal reagents.

Actions and Uses.—Stovaine acts as a local anesthetic of about the same power as cocaine, but dilates the blood vessels, whereas cocaine contracts them and exerts a tonic action on the heart. It is only 1/3 to ½ as toxic as cocaine.

It is used as a local anesthetic; while most reports are favorable, one case of gangrene has been reported following the use of a 10 per cent. solution.

Dosage.—Internally, 0.002 Gm. (1/30 grain) as pill. Locally it may be used in the eye in 4 per cent. solution and applied to other mucous membranes, as in laryngology, in from 5 to 10 per cent. solution. For hypodermic injections for local anesthesia it can be used in 0.75 to 1 per cent. solution.

Manufactured by the Poulenc Frères Company, Paris (Walter F. Sykes, New York).

STYPTICIN.

COTARNINE HYDROCHLORIDE.

Stypticin, $C_{12}H_{13}O_6N.HCl$, is the hydrochloride of cotarnine, an oxidation product of narcotine, similar to hydrastinine.

It is prepared by boiling narcotine for a long time with water or by heating it with dilute nitric acid and converting the basic product obtained into the hydrochloride.

It is a yellow, crystalline powder, soluble in water and in alcohol. Its melting point is indefinite.

If to a solution of stypticin tenth-normal iodine V.S., is added a brown precipitate of cotarnine periodide is produced, which if collected and dried over sulphuric acid melts at 140° C. (284° F.).

If to a solution of 0.1 Gm. stypticin in 2 Cc. of water 3 drops of a 15 per cent. sodium hydroxide solution are added, each drop will produce a milk white precipitate which dissolves on agitation. After a time the free base separates from the clear solution, leaving the supernatant liquid clear and but faintly yellow. The base after recrystallisation from benzene, melts, with decomposition, at 130° to 132° C. (266° to 269.6° F.).

Actions and Uses.—Stypticin is a hemostatic, analgesic and uterine sedative. The mechanism of its action is obscure.

It has been recommended particularly in functional dysmenorrhea and menorrhagia of puberty and of the climacteric; in subinvolution of the uterus after parturition and abortion, as well as in all profuse uterine hemorrhages; in bleeding from the bladder, from the nose, after extraction of teeth, etc.

Dosage.—Internally 0.05 Gm. (¾ grain) four to five times daily, in sugar-coated tablets or gelatin capsules; or by hypodermic injection (in urgent cases) 3 Cc. of a 10 per cent. solution; externally, as a styptic, pure or in strong solution.

Manufactured by E. Merck, Darmstadt (Merck & Co., New York). U. S. trademark.

Because of the intensely bitter taste, stypticin is also marketed in the form of sugar coated tablets containing 0.05 Gm. (¾ grain) each.

STYPTOL.

COTARNINE PHTHALATE.

Styptol, $(C_{12}H_{13}O_6N)_2C_6H_4(COOH)_2$, is the normal phthalate of cotarnine, an oxidation product of narcotine, similar to hydrastinine.

The base cotarnine, obtained from narcotine by oxidation with dilute nitric acid, is combined with phthalic acid to form the neutral salt.

It is a yellow, microcrystalline powder, easily soluble in water. The base is recognised by the tests given under stypticin.

Actions and Uses.—Its action resembles that of stypticin Compounds with phthalic acid are said to have especial hemostatic properties.

Styptol has been recommended in uterine hemorrhages.

Dosage.—0.065 Gm. (1 grain) in sugar-coated tablets, 3 to 5 times daily.

Manufactured by Knoll & Co., Ludwigshafen a. Rh. and New York. U. S. patent No. 742,423. U. S. trademark No. 40,688.

STYRACOL.

CINNAMYL GUAIACOL. GUAIACOL CINNAMATE.

Styracol, $C_6H_4.CH:CH.COO(C_6H_4.OCH_3) = C_{16}H_{14}O_3$, is the cinnamic acid ester of guaiacol.

It is prepared by allowing guaiacol and cinnamyl chloride in molecular proportions to react on each other for two hours at the ordinary temperature, then heating the mixture on the water bath for a short time and purifying the product of the reaction by several crystallisations from boiling alcohol.

It forms colorless, odorless and tasteless crystalline needles, melting at 130° C. (266° F.). It is insoluble in water, but easily soluble in alcohol, acetone, chloroform and benzene. It contains 55 per cent. of guaiacol, which is split off by the action of alkalies.

It is incompatible with alkalies.

Actions and Uses.—Styracol is an intestinal antiseptic and is claimed to combine the antituberculous actions of guaiacol and cinnamic acid. It is said to liberate in the intestinal canal a larger proportion of its guaiacol (up to 85 per cent.) than other synthetic preparations of that substance.

It is recommended for the initial stage of phthisis, chronic enteritis and intestinal disturbances in general, catarrh of the bladder, etc.

Dosage.—1 Gm. (15 grains) in powder or tablets.

Manufactured by Knoll & Co., Ludwigshafen a. Rh. and New York. German patent No. 62,176. U. S. trademark No. 42,487.

(*To be continued.*)

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[For other information see second page following reading matter.]

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DEVIATION OF COMPLEMENT BY SERUM PLUS ANTISERUM AS A TEST FOR BLOOD.

Gengou,[1] Moreschi[2] and others[3] have shown that immunization of animals with alien serum or albumins gives rise to antibodies which, on union with constituents (antigens) in the material used for immunization, possess the power to bind complement. This anticomplementary action of serum plus antiserum (antigen plus antibody) is easily demonstrable, because it manifests itself by preventing lysis of red corpuscles by hemolytic serum, normal or immune.

In its simplest form the reaction is carried out as follows: Certain quantities of normal serum, of the corresponding antiserum (both heated to 56 C. for 30 minutes to destroy the native complement) and of normal hemolytic serum are mixed; after one hour there is added the proper amount of 5 per cent. suspension of suitable washed corpuscle; the mixture, together with the necessary controls, are placed in the incubator and the degree of laking determined at the end of two hours. Neutralization or deviation of the complement is demonstrated also by the use, in place of normal serum, of a heated immune hemolytic serum, the complement being furnished by a fresh normal serum which in the quantities necessary is not in itself lytic for the corpuscles used.

That the absence of laking in these experiments is due to the failure of complement to act is shown by the fact that the corpuscles do absorb the amboceptor; for if the corpuscles be washed and new complement added then laking occurs promptly. So far as the amount of normal serum demonstrable in this way is concerned, the reaction is one of extraordinary sensitiveness. Indeed, Friedberger was able by this method to demonstrate the presence of a certain serum in dilutions of 1 to 1,000,000,000.

When serum and antiserum are brought together a precipitate forms, and Gay holds that the complement is removed by this precipitate. Muir and Martin find that if precipitate is formed the complement is removed, but that the phenomenon of deviation of the complement may occur without precipitation. Wassermann and Bruck, as well as Friedberger, also found that precipitation is not essential.

Neisser and Sachs have pointed out that the neutralization or deviation of the complement by serum plus antiserum constitutes a new test for blood and other albuminous substances of greater sensitiveness than the precipitation test and of at least equal specificness. They consequently recommend the new test for forensic purposes in order to corroborate and in certain special cases to supply the deficiencies of the precipitation test. While there is no question that the differentiation of albuminous substances by means of complementary deviation is a most important advance in the study of the reactions of immunity, its use for practical ends is beset with certain difficulties. Suspected blood stains and other materials submitted for examination for forensic purposes are seldom free from admixture with substances that may influence the outcome of this test. Such substances may be of two kinds, namely, (1) such as in themselves cause laking of blood corpuscles, and (2) such as in themselves suspend the action of complement. Thus the presence of certain bacteria with hemolytic power, or of their products, might cause laking in spite of suspension of the action of the complement. We know, further, that substances of various kinds can deprive a serum of its lytic power by the effect on the complement, e. g., suspensions of certain bacteria, powdered yeast, cells of various organs, Irish moss, broth, various extracts, and many chemicals, especially salts.[4] In small quantities of solutions isotonic with serum, numerous more or less common salts prevent lysis by their action on the complement, e. g., $CaCl_2$, $BaCl_2$, $SrCl_2$, $MgCl_2$, K_2SO_4, $MgSO_4$, $(NH_4)_2CO_3$, $NaHCO_3$, $Na_2C_6H_6O_7$, $Na_2C_2O_4$, $(NH_4)_2C_2O_4$, $K_4Fe(CN)_6$, $K_4Fe_2(CN)_{12}$. Salts like NaCl, KCl, LiCl, NaS, NaBr, etc., which are not antilytic in solutions isotonic with blood serum, suspend lysis in higher concentrations. Of great interest from the practical point is the demonstration by Uhlenhuth[5] that extracts of the following large variety of substances have the power to prevent hemolysis presumably by their action on the complement: jute, hay dust, paste-board, dirt, wood, wool, gravel, bread, leather, feathers, hair, linen, hats, etc. Furthermore, that urine, peptone, peptone-broth, tuberculin and certain normal sera are antilytic.

Practically all these non-specific antilytic substances retain their antilytic action after boiling, whereas the power of substances in serum to unite with the proper antibody is destroyed on boiling. It is also probable that none of the non-specific antilytic substances will be found to possess any antilytic effect in such high dilutions as do albumins of various kinds. Naturally the complicated nature of this interesting test limits its use

1. Ann. de l'Inst. Pasteur, 1902, xvi, 734.
2. Berl. klin. Wochenschr., 1905, xlii, 1183.
3. Gay: Ann. de l'Inst. Pasteur, 1905, xix, 593; Neisser and Sachs: Berl. klin. Wochnschr., 1905, xlii, 1388, and 1906, xliii, 67. Liefmann: Berl. klin. Wochnschr., 1906, xliii, 448. Muir and Martin: Jour. of Hygiene, 1906, vi, 265. Friedberger: Deut. med. Wochenschr., 1906, xxx, 878.

4. The literature up to 1904 is cited by Hektoen and Ruediger, "The Antilytic Action of Salt Solutions and Other Substances," Jour. Infect. Dis., 1904, i, 399.
5. Deut. med. Wochenschr., 1906, xxxii, 1244.

to especially equipped laboratories. It can not be claimed that this test will supplant the precipitin test for forensic purposes; in investigative work it is proving to be of value and it shows us how highly complex the reactions of immunity are.

AFTER-CARE PROBLEMS.

No movement in modern preventive medicine is more interesting or more full of promise than the awakening of attention in recent years to the "after-care" of individuals who have suffered from more or less chronic ailments and who, after treatment for some time in institutions, have been discharged as cured. Tuberculosis and insanity in particular have deservedly been the subjects of this special attention and any auxiliary that will reduce the morbidity and mortality for either of them must be heartily welcomed. The decrease of both of these affections is dependent to a much larger extent on the after-care of those who have been under special treatment than was imagined until a few years ago when the crying need of post-sanitarium measures at last found responsive auditors among the medical profession and those charitably inclined.

With regard to tuberculosis, no phase of the crusade against the disease is more important than proper provision for the so-called cured patients in order to prevent relapse. If a person goes back to the work and the environment in which he originally contracted tuberculosis, relapse is almost inevitable. This might have been so concluded on theoretic grounds, but experience has demonstrated it beyond all doubt since the establishment of sanatoria for the disease. Cured patients must not, as a rule, return to live the strenuous life of the large city, lest the period of latency of their tuberculosis —for radical cure is almost out of the question—will be at best but short. A country life without too much work and with plentiful opportunities for outdoor air and abundant food are the ideals of the postsanitarium life of the tuberculous. Unfortunately, these can not always be obtained and, if a decided improvement in this matter is to be brought about, organization of the after-cure of the tuberculous is as important as corresponding organization for the erection and maintenance of sanatoria and for the education of the masses, with regard to the prophylaxis and proper management of the disease.

Fortunately, the after-care movement with regard to the other great series of affections which are just now rousing so much attention all over the world—those grouped under the name insanity—is already well under way and promises to advance rapidly. The first of these societies for the after-care of the insane was founded only a few years ago in England. Its methods are eminently practical. The secretary of the society visits the asylums, works in close coöperation with the medical superintendents and is notified by them when patients who are to be discharged cured are poor and without homes or friends. For such individuals boarding places —in the country for the women, in the city for the men—have previously been arranged by the society. These are not large institutions or buildings owned by the society, for, as the first report ot the committee on After-Care of the Insane of the State Charities Aid Association of New York insists, the society does not wish them, but prefers small cottage homes—small boarding houses as we should call them—where a man and his wife are willing to board these after-care patients. Their board is paid by the society usually for trom one to six weeks until health is fully reëstablished and the individuals are able to work. The women require much more looking after than the men. Employment is found for both sexes, so far as possible in a suitable environment, and then the society keeps in communication with them until they are absorbed into the community as ordinary self-supporting self-respecting men and women.

It is almost needless to say that such an organization accomplishes work of the greatest possible utility and by preventing relapses decreases greatly the expense incident to the support of patients in the insane asylums, for relapsed cases often prove obstinately intractable and further improvement to an extent that will allow them to leave the asylum can scarcely be expected. An organization of a similar kind to that in England has been established during the present year in America and it seems only proper that the medical profession should encourage the good work that it is doing in every possible way. If corresponding organizations for the after-care of tuberculosis patients were to be established they too would doubtless accomplish most satisfactory work. If the community owes it to itself and its citizens that it shall take care of persons ailing from such diseases it would seem to be even more important that after their cure it should make every effort to maintain them in that state of improved health which its paternal care has secured for them.

NOSTRUM ADVERTISEMENTS IN THE RELIGIOUS PRESS.

Now that many newspapers are refusing advertisements of questionable proprietary medicines, it may not be amiss to call attention to the shortcomings of another class of journals in which these advertisements are more or less prominent, namely, the religious and semi-religious publications. *A priori* it might be expected that publications of this character would exclude from even their advertising pages any statement which was obviously lacking in truth, so far as human experience is able to judge of truth. A glance over the advertising pages of the available religious and semi-religious journals shows that this is far from being the case. Discrimination must be made, however, between certain high-class theological publications and semi-religious

journals (as the *Outlook*, for example) on the one hand and the cheaper weekly semi-religious sheets on the other. The former are clean in their advertising, the latter are far from being so.

The class of medical advertisements contained in the ordinary religious weeklies does not differ greatly from that found in the daily papers. Aside from the legitimate medical advertisements, two classes are to be noted: first, those claiming to cure incurable diseases and, second, those whose claims are obviously exaggerated. It will hardly be credited that, after *Collier's* exposure of the vampires who fatten on the credulity of the unfortunate cancer sufferer, any decent paper, much less one of religious tendencies, would publish the advertisements of this shameless crew. Yet we find in the pages of the *Episcopal Recorder* of Philadelphia a statement in flaring type, "Cancer Cured by Soothing Balmy Oils." This emanates from the notorious "Dr." Bye of Kansas City, and, indeed, both this "Dr." Bye and the "Dr." D. M. Bye of Indianapolis are represented in this journal. A similar "oil cure" for cancer, by one "Dr." L. T. Leach of Indianapolis, is to be found among the advertisements of the *Advance*, a Congregationalist journal published in Chicago. Such advertisements are not only palpably false, but actually cruel, and, published in the pages of journals which are supposed to stand for the Christian principles of rectitude and truth, are doubly worthy of condemnation. Hardly less despicable are other advertisements heralding the sure cure of incurable or very intractable diseases, like heart disease, asthma, or baldness. What should be thought of a religious journal (the *Westminster*) which published the statement that "on the very first indication of heart disease you can stop all progress and effect a cure by the use of Dr. Miles' Heart Cure"; or of another (*Western Christian Advocate*) which states that "magic foot drafts possess the remarkable power to compel the system to yield down through the great foot pores the impurities which cause rheumatism, relieving where everything else has failed"? These are the most glaring examples, and the papers mentioned are the most flagrant offenders, but by no means the only ones. One journal cites on one page a reference to Isaiah, giving the prophet's remarks against the use of alcoholic drinks, while on another page it advertises a notorious sarsaparilla which contains 18 per cent. of alcohol. A journal which, with evidently human motives, advertises a fake cancer cure, decries on another page the fact that "the divine motive, once so great and effective an appeal, is set aside for the human motive," a fact of which any one who perused its advertising columns would be convinced. Another journal, the *Cumberland Presbyterian*, in one issue has an editorial on the evils of drink, and in the next issue an advertisement extolling the virtues of wine of cardui. This journal also carries an advertisement of Mrs. Winslow's soothing syrup.

Why does such a condition of affairs exist? Doubtless it is partly the fault of the medical profession who, until recently, have countenanced equally unveracious advertising in their own papers. Partly, perhaps, it is due to the optimism cultivated by religious training. We fear, however, that it is mainly the result of the application of the so-called business principles to the conduct of religious journals. While the application of true business principles to the affairs of religious journals is worthy of nothing but praise, we fear that the publication in their advertising columns of absolute falsehood or perverted truth can not be considered as coming under this head. Let us hope that when these matters are brought to the attention of the proprietors of the journals mentioned they will see them in their true light and will institute reform.

EXPOSURE OF QUACKERY DOING GOOD.

Mr. Samuel Hopkins Adams, who is now editor of *Ridgway's*, evidently has not lost his interest in the fight against "patent medicines" and quack doctors. Two weeks ago[1] we referred to the splendid work that the Cleveland *News* was doing in showing up the quack doctors of Cleveland, and Mr. Adams has written to the *News* congratulating that paper on its work of exposure. He says: "If newspapers in other cities would turn the fire of their guns on these rascals their activity would very soon end. As it is, you are doing a very great work for Cleveland, which is, of course, your object, but, perhaps, indirectly an ill service for other cities, for the flock of vampires whose roosts you have disturbed will hover for a time and then scatter and settle in various parts of the country. It is a pity that there is not in every one of our larger cities some paper courageous enough to undertake such a campaign as you have successfully carried on." There is plenty of evidence to show that the advertising quack doctors, whether they conduct this business as individuals or as "institutes," are "on the anxious seat," and there is also evidence to show that the work already done has checked the flow of gold into the coffers of these frauds.

EUGENIC LEGISLATION.

The Supreme Court of Connecticut, it is reported, has affirmed the power of the legislature to enact "eugenic legislation." The Connecticut act is upheld which forbids the marriage of epileptics, except when the woman is over 45, thus establishing an important principle. Other questions, however, will arise. Aside from the fact that Connecticut legislation will not prevent epileptics from marrying in other states, the question as to who is an epileptic is to be decided. Is it to be one who has frequent or occasional fits—in other words, a habitual epileptic—or any one who has ever suffered from the disease? Epilepsy implies a certain degree of brain instability that may be inherited in one form or another. There are epileptics who never have more than one convulsion; there are others who, with very infrequent attacks, give evidence of having exceptional brain

1. The Journal A. M. A., Nov. 10, 1906, pp. 1568 and 1579.

power and who may with equal likelihood transmit this to their posterity. There are still others who have had frequent attacks under conditions of special stress, altogether exceptional in the lives of normal individuals, and under no other conditions. Of course, in the great majority of epileptics there can be no question regarding the nature of the disorder and its chronicity. But what about the occasional curable cases? Are we to accept the rule, which seems to be admitted, "once an epileptic, always an epileptic"? The strict enforcement of the Connecticut law will undoubtedly work hardship in a few cases, but, on the whole, it is a rational one, and its enforcement will be to the advantage of future generations.

ASYLUM DYSENTERY.

The occurrence of outbreaks of dysentery in hospitals for the insane has been noted for years in this country, in Great Britain, and on the continent of Europe. The curious thing about many of the outbreaks has been that they have occurred in districts seemingly free from dysentery, and have usually spared the physician and nurses who looked after the sick. A recent epidemic reported from an asylum in central Germany by Liefmann and Nieter[1] shows that physicians and attendants may be attacked. The report of these observers also shows that the spread of the infection is slow, that it is usually confined to certain localities in the hospital, and that there is an appreciable gap between each case. It is certain from these facts that it spreads by contact, and is doubtless due to the well-known dirty habits of insane patients. It has been shown that this form of dysentery, like most epidemic outbreaks reported in recent years, is due to the *Bacillus dysenteriæ*, and usually to the strain common in the United States and temperate climates generally. Liefmann and Nieter lay stress on the fact that the bacilli occur in individuals with slight intestinal disturbances, or even in those who appear in good health. This corresponds to the experience in typhoid fever, in Asiatic cholera, and in diphtheria, and serves to emphasize the fact, not yet widely enough appreciated, that it is the mild cases of infectious disease which are often the greatest danger to the community. The contact infection in the epidemic above reported suggests the prevention of such outbreaks by early isolation of infected patients.

NURSES' SCHOOLS AND ILLEGAL PRACTICE OF MEDICINE.

Physicians have enough examples before them to emphasize the danger of putting the power to practice medicine into the hands of those who will use it wrongly. Some physicians, however, do not seem to learn this lesson. J. Noir[2] criticises certain methods of instruction and certain manuals for nurses as having a tendency to encourage the production of illegal practitioners. He quotes passages from an English manual which support his contention, and reproduces the following resolutions which were adopted unanimously in the Congress for the Suppression of Illegal Practice: "1. Every attempt at initiative on the part of nurses, attendants, orderlies, etc., should be reproved by the physicians and by the hospital administration. 2. The programs of nursing schools and the manuals employed should be limited strictly to the indispensable matters of instruction for those in their position, without going extensively into purely medical matters which might give them a false notion as to their duties and lead them to substitute themselves for the physician. 3. The professional instruction of orderlies and nurses should be intrusted exclusively to the physicians, who only can judge what is necessary for them to know. 4. The physicians charged with this instruction should never forget, in the course of their lectures, to insist on the possible dangers of the initiative on the part of orderly and nurse and on the serious responsibility that would be incurred in case of accident by the persons thus inconsiderately stepping out from their proper sphere." These maxims should certainly be borne in mind by the physician who has dealings with the nurse, as a matter of simple justice to her that she be not encouraged to take steps that are not in her province.

1. Münchener Med. Woch., 1906, III, 2097.
2. Progrès Méd., June 16, 1906.

THE ETIOLOGY OF ACUTE MENINGITIS.

Like acute inflammation elsewhere, acute meningitis (non-tuberculous) may be caused by a variety of microbes, the most important being the meningococcus and the pneumococcus. The disease caused by the meningococcus generally occurs in epidemic form, although sporadic cases are not infrequent, and the meningococcus is regarded as the specific cause of epidemic cerebrospinal meningitis. Streptococci and staphylococci also may cause meningeal inflammation, and of late it has been shown that anaërobic bacteria may play the same part. Ghon, Mucha and Müller[1] of Vienna describe with great detail the anaërobic bacteria they isolated from a small series of cases of meningitis following chronic infections of the ear. Rist and others have shown that anaërobic bacilli occur to a greater extent than surmised in ear infections so that it would be quite reasonable that such anaërobes should invade the meninges under favorable conditions. This is not the proper place to describe the individual species isolated by Ghon and his colleagues; it may be noted, however, that none of the organisms was highly pathogenic for animals. This, perhaps, is owing to the difficulty in isolating anaërobes, the original virulence being lost by the time pure cultures finally are obtained. The Vienna investigators are convinced that a small anaërobic bacillus, very much like the influenza bacillus in size and form, was the cause of the meningitis in two of their cases. In a third, the exudate emitted a fetid odor, and here they isolated an anaërobic, fetor-producing vibrio. The results here outlined seem to indicate that the use of anaërobic methods will show that anaërobic bacteria play a more important part in many inflammatory processes than hitherto understood. Eventually facts may accumulate from which it will be possible to draw lessons of practical importance.

1. Centrlbl. f. Bakt., 1906, vol. xxxi, p. 1.

Medical News

ARKANSAS.

Suit Compromised.—The suit of the City of Fayetteville against Dr. S. J. Brownson is reported to have been compromised, November 8, the defendant giving the city $50. Dr. Brownson was fined $300 in the police court last summer on the charge of the illegal sale of liquor.

Must Register Births.—At a meeting of the city council of Fayetteville, November 7, an ordinance was passed requiring registration of births in that city, under penalty of a fine of not less than $5 nor more than $20. An ordinance was also passed requiring physicians to report all cases of infectious or contagious diseases.

Personal.—Dr. Arthur B. Loving, Pine Bluff, has been appointed physician of Jefferson County.——Dr. William Illing, Little Rock, on his retirement from his position as physician and superintendent of the Pulaski County Hospital, was presented with a handsome chest of silver, November 5, by many friends.——Dr. William N. Yates has been elected a member of the Fayetteville Board of Health.

CALIFORNIA.

Smallpox.—The whaling schooner *Monterey*, which arrived at San Francisco from the North, November 3, reported 16 cases of smallpox, some of which terminated fatally.

Medical Fund Created.—By the will of the late Mrs. Fannie Letitia Keating, San Diego, Dr. Henry T. Woodward is bequeathed $10,000, and, after certain bequests are made, the will stipulates that all the remainder of her estate shall be invested and the proceeds applied to "the employment of one or more duly qualified medical and surgical practitioners, who shall devote all of his or their times and energies to the relief of the sick poor, either permanent residents or visitors to the city of San Diego, irrespective of sex, politics and creed."

Typhoid Fever.—The appearance of typhoid fever in many parts of Oakland has caused the city health officer, Dr. Edward N. Ewer, to announce officially that all drinking water should be boiled. In October 56 cases were reported to the health officer.——On November 6 the health officer of Berkeley reported 12 cases of typhoid fever in families supplied with milk from a single dairy, and advised that the sale of milk from that dairy be stopped until it complied with the health regulations.——Typhoid fever is reported to be epidemic at Camp A, Scotia.

Personal.—Dr. John R. Haynes, Los Angeles, has returned from abroad.——Dr. Alfred H. Voorhies, San Francisco, suffered a cerebral hemorrhage, October 20.——Dr. and Mrs. John J. Tully, Stockton, have returned after a trip abroad.——Dr. Robert T. Stratton has resigned as surgeon of the Oakland Receiving Hospital after a service of 15 years and has been succeeded by Dr. Oliver D. Hamlin. Dr. William H. Irwin has been appointed assistant physician at the hospital.——Dr. John R. Colburn, Los Angeles, has returned from a three months' trip in the Orient.——Dr. Adam Shirk, Oakland, is reported to be seriously ill with heart disease.——Dr. Edward M. Pallette has been appointed delegate from Los Angeles to the American Health Congress, to be held in the City of Mexico.

CONNECTICUT.

Typhoid Fever.—The typhoid fever epidemic at Wesleyan University, Middletown, is reported to be increasing. Professor Conn, state bacteriologist, says he is confident that the cases originated from oysters eaten at a recent fraternity banquet.

Colony for Epileptics.—At the annual meeting of the National Society for the Study of Epilepsy, held in New Haven, November 8, it was announced that the state commission appointed by the governor in 1905 will ask the legislature for an appropriation of $100,000 to establish a colony for the care of epileptics.

Personal.—Dr. John F. Barnett, West Haven, has recovered from his recent illness and resumed practice.——The Alumni Association of St. Francis Hospital, Hartford, has been organized, with the following officers: Honorary president, Dr. Daniel F. Sullivan, Hartford; president, Dr. Richard A. Outerson, Windsor Locks; vice-president, Dr. James F. Rooney, Plainville, and secretary-treasurer, Dr. Joseph P. Ryan, Hartford. ——Dr. Frank A. Benedict, Seymour, surgeon of troop "A," N. G. Conn., was thrown from his horse November 5 and sustained a fracture of the forearm.

GEORGIA.

Hospital Notes.—Sealed proposals are invited by the city of Columbus for the sale of about one acre of land in the city, suitable as a site for a hospital.——Plans are being considered for the erection of a sanitarium in Roseview Heights, a suburb of Eatonton.

Personal.—Dr. Roberts P. Izlar is reported to be seriously ill at his home in Waycross.——Dr. and Mrs. W. A. Turner, Jr., Newman, leave this month for Germany.——Dr. John J. Hill, Washington, is reported to be critically ill.——Dr. Theo. B. Davis, Newman, was painfully injured by a fall from his horse, November 2.

District Societies Meet.—The Sixth Councilor District Medical Society held its first annual convention in Macon, November 8, on the call of Dr. Mallie A. Clark, Macon, councilor of the district. The following officers were elected: President, Dr. John R. Shannon, Cabaniss; vice-president, Dr. J. A. Combs, Locust Grove, and secretary-treasurer, Dr. Eugene B. Elder, Macon. Dr. O. C. Webb, Jenkinsburg, opened the convention with a strong address on "The Importance of Organization." In the afternoon a banquet was tendered the society by the local members of the profession.——The Fifth District Medical Society met in Atlanta, October 16, and elected the following officers: President, Dr. John C. Olmsted, Atlanta; vice-president, Dr. E. Bates, Block, Atlanta, and secretary-treasurer, E. W. Ragsdale, Covington.

ILLINOIS.

Personal.—Dr. Harry H. Henning, Plano, has moved to Sugar Grove.——Dr. Miles D. Baker, for 10 years assistant superintendent of the Illinois Southern Hospital for the Insane, Anna, has tendered his resignation, to take effect December 1, on account of impaired health.

Society Meeting.—At the semi-annual meeting of the Fox River Valley Medical Association, held in Aurora, November 13, the following officers were elected: President, Dr. Albert A. Fitts, Batavia; vice-president, Dr. Ralph R. DeWitt, Hampshire; secretary-treasurer, Dr. George F. Allen, Aurora (re-elected); member of the executive committee, Dr. William A. Nason, Algonquin, and censors, Drs. J. A. Rutledge, Elgin; Raymond G. Scott, Geneva, and William J. Calhoun, St. Charles. The association will meet in Elgin in April, 1907.

Epidemic Diseases.—The John Deere school, Moline, which has been closed on account of an epidemic of scarlet fever, was reopened October 29.——An epidemic of smallpox is reported from Murdock, Douglas County. The disease was diagnosed as "Cuban itch."——Diphtheria and scarlet fever are reported to be epidemic in portions of Peoria County, and the Brimfield, Dunlap and Glasford schools have been closed.——Typhoid fever is reported to be epidemic in Waukegan, due, it is claimed, to a contaminated water supply.——The board of education of Averyville has decided to close the school of that village for a week on account of the prevalence of diphtheria. ——Scarlet fever in Glencoe has resulted in the closing of the Glencoe public school and public buildings.

Chicago.

Police Ambulances for Health Department.—The chief of police has recommended that the police ambulance service of the city be placed under the control of the city health department.

Personal.—Dr. Fernand Henrotin is critically ill with myocarditis at his home.——Dr. William P. Koons was severely cut by flying glass in a collision between his automobile and a street car, November 10.

Reception and Ball by Nurses.—The Chicago Polyclinic Nurses' Alumnæ Association held a reception and ball November 28 for the benefit of a fund to endow a bed for nurses at the new Polyclinic Hospital.

Health Report.—During the week ended November 24, 574 deaths from all causes were reported in Chicago, 7 fewer than for the previous week and 106 more than for the corresponding week of 1905. Pneumonia caused 90 deaths; consumption, 53; heart diseases, 51; nephritis, 45; violence (including suicide), 40; acute intestinal diseases, 31; cancer, 28; diphtheria and scarlet fever, each 13, and typhoid fever, 8.

INDIANA.

In Memory of Dr. Rosenthal.—The Allen County Medical Society at its regular meeting adopted resolutions expressing the bereavement of the society in the death of Dr. Isaac M. Rosenthal. Among the active pallbearers at the funeral were

Drs. Albert E. Bulson, Jr. and Miles F. Porter, and among the honorary pallbearers were Drs. George W. McCaskey and William P. Whery.

Communicable Diseases.—There have been reported 31 cases of smallpox in Madison, with 2 deaths. The board of health has established two isolation hospitals, and all patients have been removed to them.——In South Bend 17 houses are under quarantine on account of smallpox. All quarantine rules are being properly observed and all suspected cases are being treated as smallpox until diagnosis can be properly made.——Several cases of diphtheria have been reported in Laporte, with one death.——In Ladoga 9 cases of diphtheria have been reported.——During the first six days in November 15 cases of diphtheria had been reported in Indianapolis. The secretary of the State Board of Health reports that every county in the state has cases of diphtheria.——In Windfall 5 persons are critically ill with typhoid fever, due to the use of drinking water from shallow wells.——During the first ten days of the month 54 cases of typhoid fever were reported in Indianapolis.

MASSACHUSETTS.

Dispensary Meeting.—The one hundred and tenth annual meeting of the Boston Dispensary showed that the staff of about 100 physicians had cared for 104,405 patients in the 18 departments of the dispensary during this last year, besides 22,110 visits made on poor people at their homes. This last work is very greatly enlarged by the aid of the nurses of the Instruction District Nursing Association, one of whom accompanies each district physician on his visits. Urgent efforts are being made to increase the $21,630 already subscribed to the $100,000 needed to enlarge the buildings on the land already owned, in Bennett Street.

MICHIGAN.

Fined for Illegal Practice.—A. W. Van Bysteveld, Grand Rapids, who calls himself the "wonder doctor," paid a fine of $100 in the Superior Court, November 14, on the charge of practicing medicine without a license.

Medical Student Dies.—Joseph H. Stonehouse, a junior student in the medical department of the University of Chicago, of Escanaba, died in Chicago, November 17, from typhoid fever, after an illness of a few days.

Goldthwaite in Ann Arbor.—Dr. Joel E. Goldthwaite of Boston visited Ann Arbor and lectured to physicians and the senior class of the university, November 12. He was the guest of Dr. Reuben Peterson while in the city.

Epidemic Diseases.—During October 156 deaths were reported in the state from typhoid fever, the greatest number in that month for any year since 1901.——An epidemic of scarlet fever has broken out in Hartford, where about 150 cases are reported. The schools have temporarily been closed.

Personal.—Dr. Arthur J. Wilkinson, Hillman, has been elected coroner of Montmorency County.——Dr. Thomas M. Koon is reported to have tendered his resignation as health officer of Grand Rapids, to take effect Jan. 1, 1907.——Dr. Athanase E. Gourdeau, Ishpeming, has returned from Mexico.——Dr. D. E. Aiken, an aged practitioner of Grand Rapids, was struck by a street car November 9, and severely injured.

NEW YORK.

Hospital Name Changed.—The Niagara Hospital, Buffalo, has changed its name to the Lincoln Hospital.

Measles.—More than 150 cases of measles have developed in and around Sloatsburg, Rockman County.

Water Supply Bad.—The water supply of Buffalo still continues unsatisfactory and the Council is considering the establishment for its betterment of either a filtration or a sedimentation plant.

Scarlet Fever Epidemic.—Scarlet fever is reported to be epidemic in the schools of Buffalo, and the cause of the disease has been traced to the home of a barber, who is said to have boasted that he would not report the disease nor call a physician. He is to be prosecuted.

Census of the Blind.—The New York state commission to investigate the condition of the blind proposes to make a census of the blind persons in this state and to determine which are physically capable of engaging in some occupation, and also to make recommendations to the legislature in regard to the establishment of industrial schools for this class of unfortunates. The secondary object is to learn the causes of blindness and to establish preventative measures where possible.

Site for State Hospital.—An investigation is being made in regard to the establishment of a state hospital for the insane at Comstock for which a site has been purchased, it is claimed, for purely political reasons. The state lunacy commission is opposed to Comstock as a site because of its distance from the larger cities of the state, and its inaccessibility. The state has already made a payment of $42,500 on the site, but it is held that this amount would better be lost than that the proposed $1,000,000 should be expended on an institution so located.

Centennial Celebration.—The Broome County Medical Society celebrated its centennial October 24, at Binghamton. The opening address was delivered by the president, Dr. Frederick M. Miller; Drs. John G. Orton and Daniel S. Burr gave interesting reminiscences of the early days of the society, and Dr. Charles G. Stockton, Buffalo, delivered an address on "Comparison of Ourselves with Our Forebears," and Dr. Joseph L. Bryant, New York City, spoke on "Some Lessons of the Hour."

Personal.—Dr. Joel E. Goldthwait, Boston, read a paper before the Buffalo Academy of Medicine, November 13, on "A Consideration of the Pelvic Articulations."——Dr. Harvey R. Gaylord, Buffalo, who fractured his leg in an automobile accident, is making good progress toward recovery.——Dr. Bernard Cohen, Buffalo, is taking a trip to Bermuda.——Dr. John H. Pryor, Buffalo, has been reappointed a member of the board of trustees of the New York State Hospital for Incipient Tuberculosis.——Dr. William H. Beach, Catharine, who was recently operated on in the Bethesda Sanitarium for a tumor, is reported to be convalescent.——Dr. Christopher C. Reid, Rome, who is a patient in St. Luke's Hospital, Utica, on account of injuries received in a fall from a street car, is reported to be doing well.——Dr. Clara Swain, Castile, has started for India.

New York City.

Nurses' School for Bellevue.—Plans have been filed for a six-story fireproof training school for women at Bellevue, to have a frontage of 151 feet, a depth of 194 feet, and to cost $575,000.

New Home for Hospital.—The Washington Heights Hospital has bought two brownstone dwellings on West One Hundred and Sixty-fifth Street which it will occupy as soon as the necessary alterations are made.

Harvey Lectures.—The subject of the fourth lecture in the Harvey Society course by Prof. J. George Adami, Montreal, at the New York Academy of Medicine, December 1, is "Myelins and Potential Fluid Crystals of the Body."

Large Gifts to Charity.—The first anniversary of the death of L. G. Bloomingdale was commemorated, according to his wishes, by the distribution of a number of bequests, among which were $25,000 to the Montifiore Country Home for Consumptives, $5,000 to the Hebrew Orphan Asylum, and $5,000 to Mount Sinai Hospital.

The Jewish Hospital Society.—At the annual meeting of this body it was announced that $50,000 was required at once in order to equip and operate the new hospital which had been purchased at a cost of $335,000. This building was formerly the Memorial Hospital for Women and Children and will be opened by the purchasers on December 9. The hospital has 175 beds and will cost $100,000 a year for maintenance.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended November 17, 373 cases of tuberculosis, with 176 deaths; 253 cases of diphtheria, with 36 deaths; 115 cases of scarlet fever, with 5 deaths; 108 cases of typhoid fever, with 14 deaths; 90 cases of whooping-cough, with 8 deaths; 72 cases of measles, with 3 deaths; 21 cases of cerebrospinal meningitis, with 8 deaths; 46 cases of varicella and one case of smallpox, a total of 1,079 cases, with 250 deaths.

Personal.—Dr. and Mrs. George T. Fox arrived from Hamburg on the *Patricia* November 23.——Dr. Frederick E. Beal had a severe hemorrhage from a gastric ulcer and is now slowly recovering at the Polyclinic Hospital.——Dr. Frederick Bierhoff was shot by a former female patient, supposed to be insane; his wounds, though painful, are not serious.——Dr. Louis W. Bremerman has been appointed professor of genito-urinary diseases in the New York School of Clinical Medicine, vice Dr. William K. Otis, deceased.

For Sydenham Hospital.—At the annual meeting of the board of directors of the Sydenham Hospital, Isaac Guggenheim announced that he would erect for the institution a $500,000 building if the board would guarantee him that it would obtain for the hospital an annual income of $50,000 or $60,000. In addition to making this offer, Mr. Guggenheim

gave $60,000 which he had collected during the past month to pay the expenses of the institution, $10,000 of which was his personal donation.

The Milk Conference.—The meeting held at the Academy of Medicine, November 20, under the auspices of the Society for Improving the Condition of the Poor, was attended by about 40 of the leading physicians and milk experts of this and other cities. Nathan Straus related his experience with pasteurized milk and was of the opinion that pasteurization was the panacea for all troubles with the milk supply, but many held different opinions. Dr. George W. Goler, Rochester, told of the system of milk stations in that city for the distribution of milk for infants. Since 1898 the mortality had been reduced from 33 to 20 per cent. Dr. L. Emmett Holt, New York City, thought that the good work of the Straus depots has been due to the fact that mothers have been taught how to feed their children, that is, the quantity of milk and time of feeding have been regulated. Dr. Walter Bensel thought that it is possible to secure a pure milk supply by inspection only if there were 80 inspectors instead of 14, as at present. The Maryland plan for a traveling dairy for the education of farmers was described. It was voted that a committee be appointed to coöperate with the board of health, the County Medical Society and the State Department of Health.

Tablet in Honor of Reed.—At its annual dinner, November 21, the Society of Ex-Internes of Kings County Hospital, Brooklyn, presented to the hospital association a bronze memorial tablet in memory of the late Walter Reed, who was an interne there in 1871, prior to his entrance into the medical department of the United States Army. The presentation address was made by Dr. A. T. Bristow, and that of acceptance by R. W. Hibberd, commissioner of public charities of New York City. Short addresses commendatory of Dr. Reed and his work were made by Dr. Howard Kelly of Johns Hopkins University, Dr. Joseph Bryant of New York City, the Rev. Lindsay Parker, and Colonel Philip F. Harvey, assistant surgeon general, United States Army. The tablet bears the following inscription:

ERECTED BY THE ASSOCIATION OF EX-INTERNES,
OF THE KINGS COUNTY HOSPITAL

To the Memory of

Walter Reed, M.D.

Interne in this Hospital, 1871.
MAJOR AND SURGEON, U. S. A.
CHAIRMAN, U. S. YELLOW FEVER COMMISSION, 1900-1901.

He robbed the pestilence of its terrors and caused the cities of the southland to sit in peace within their gates.

OHIO.

Resolutions of Respect.—Resolutions of respect and condolence regarding the late Dr. Evander J. Goodsell of Norwalk, were adopted at a special meeting of the physicians of Norwalk, September 20, and also by the Huron County Medical Society, at its regular meeting, October 11.

Hospital Notes.—With impressive and solemn ceremonies, the Good Samaritan Hospital, Zanesville, erected by the Franciscan Sisters at a cost of more than $100,000, was formally dedicated. The ceremonies were conducted by Bishop Harter of Columbus, and at the conclusion of the ceremonies an address was delivered by Dr. Joseph Price, Philadelphia.

Councilor District Meetings.—The third annual meeting of the Seventh Councilor District Medical Society was held November 1, in Uhrichsville. The meeting closed with a reception and banquet, at which Dr. James C. M. Floyd, Steubenville, acted as toastmaster. Dr. Emmet B. Shanley, New Philadelphia, was elected president, and Dr. William E. Morris, Lisbon, secretary.——At the annual meeting of the First Councilor District Medical Society, held in Cincinnati, November 8, Dr. Otho Evans, Franklin, was elected president; Dr. John Miller, Cincinnati, secretary and Dr. Albert H. Freiberg, Cincinnati, treasurer. In the evening a smoker was held at the Academy of Medicine, at which Drs. Edward H. Ochsner, Chicago, and G. Carl Huber, Ann Arbor, Mich., read papers.

PENNSYLVANIA.

Philadelphia.

Tribute to Dr. Crowder.—The faculty of the Woman's Medical College of Pennsylvania, at a recent meeting, passed resolutions recording its sense of personal sorrow in the death of Dr. Edith Cadwallader Crowder, a graduate of that institution in 1900, and afterwards an interne in the Woman's Hospital, Philadelphia.

Free Tuberculosis Clinic.—The Philadelphia Clinic for Home Treatment of Chest and Throat Diseases, 519 South Fifteenth Street, has recently opened evening clinics, in addition to the day clinics, which have been running since last March, for free treatment of consumptives. Dr. Frank Read is president of the board of managers, and Dr. Thomas J. Mays is medical director.

Hospital Report.—The report of the Stetson Hospital for the year ended November 1 shows that 22,276 patients were treated in the various departments of the institution, by far the greatest number in the clinics. Of the total number of patients treated 7,445 were surgical, 4,675 ear, nose and throat, 4,198 eye, 1,794 skin, and 3,151 medical cases. During October 1,707 patients were treated.

Civil-Service Examination.—Dr. Henry Sykes, temporary chief resident physician at the Philadelphia Hospital, passed the civil-service examination with a general average of 78.54; Dr. Henry H. Doan, with a general average of 76.94, stood second, and Dr. Charles M. Hosmer third, with an average of 75.10. As Dr. Sykes heads the list and is at present chief resident physician of the hospital, he will undoubtedly receive the permanent appointment.

Health Report.—The total number of deaths for the week ended November 24 aggregated 522, as compared with 473 for last week. The principal causes of death were: Typhoid fever, 21; measles, 6; scarlet fever, 4; diphtheria, 10; consumption, 47; cancer, 22; apoplexy, 22; heart disease, 59; acute respiratory disease, 74; enteritis, 19; appendicitis, 10; Bright's disease, 43; old age, 8; suicide, 5; accidents, 17, and marasmus, 4. There were 323 cases of contagious disease reported, with 37 deaths, as compared with 224 cases and 30 deaths reported the previous week.

Physicians Should Interview Their Councilmen.—The department of public health and charities of this city for the year 1907 will request an appropriation of $5,000 to be used in securing evidence against and in prosecuting the illegal practitioners of medicine. It is believed that this appropriation can be obtained if the medical men individually interest themselves in laying before members of councils with whom they are acquainted the facts with regard to abortion, fraudulent practice, faith cures, etc. Unless medical men take an active interest in supporting the director of public health and charities, he will be left without funds available for the purpose indicated. It is asserted that the county medical society will act in an official capacity in assisting Dr. Coplin in unearthing and bringing to justice the fraudulent practitioners.

TENNESSEE.

Personal.—Dr. John H. Kincaid, Knoxville, has returned from Europe.——Dr. Joseph Lea, Knoxville, was injured by a fall from his horse, October 26.——Dr. Marcus Haase, Memphis, has returned from abroad.

Cornerstone Laying.—The cornerstone of the new hospital of the University of West Tennessee, Jackson, was laid October 28. This hospital was founded for the free treatment of poor and needy colored people, and is the only one of its kind in western Tennessee.

Communicable Diseases.—The Fountain City Hotel, Knoxville, has been temporarily closed on account of the development of scarlet fever.——The primary school of Fountain City has been closed on account of diphtheria.——Two cases of diphtheria are reported at McEwen.

Commencement Exercises.—The exercises of the Medical Department of the University of the South, Sewanee, took place October 23. Dr. John S. Cain, Nashville, dean of the medical department, delivered a short address, which was followed by the conferring of degrees on a class of 30 by Vice-Chancellor B. L. Wiggins.

Hospital Staff Elected.—The legislative council of Memphis has accepted the resignations of Drs. George R. Livermore, William Battle Malone, Max Henning and Frank D. Smythe from the City Hospital medical staff and has made the following appointments on the staff: Physicians—Drs. William T. Black, Louis LeRoy, Oswald S. McCown and Charles S. Morrow. Surgeons—Drs. Maximilian Goltman, David M. Henning, E. Michel Holder and William B. Malone. Obstetricians—Drs. Alexander Erskine and William B. Sanford. Gynecologists—Drs. James L. McLean and Frank D. Smythe. Oculists—Drs. Edward C. Ellett and Alexander G. Sinclair. Pathologists—Drs. William Krauss and James B. McElroy. Neurologists—Drs. George G. Buford and B. Frank Turner. Laryngologists—Drs. Pope M. Farrington and Richmond McKinney, and dermatologists, Drs. Marcus Haase and Robert G. Henderson.

TEXAS.

Physician Fined.—Dr. H. G. Thomas, Handley, is reported to have been convicted of assault at Fort Worth, October 2, and sentenced to imprisonment for 60 days in jail and to pay a fine of $1,000.

Hospital Notes.—The new hospital, to be erected by the Santa Fe Railway Employés' Association, has been located at Temple. The building will cost $125,000, of which $60,000 is now available, for the erection of the main or central building.——Plans have been begun for the erection and maintenance of a sanitarium in Taylor. A stock company is to be formed, with a capital of $10,000, $4,000 of which has already been subscribed.

Personal.—Dr. Ira C. Chase, Fort Worth, was painfully injured in an automobile accident recently.——Dr. John F. Eaves, quarantine officer at Shreveport, has resigned and will practice in Bryan.——Dr. J. S. Turner, superintendent of the Northern Texas Hospital for the Insane, Terrell, has handed in his resignation, to take effect Jan. 1, 1907.——Dr. Turner's Arlington Heights Sanitarium, Fort Worth, has been incorporated with a capital stock of $40,000.

Tri-State Society Meeting.—At the annual meeting of the Tri-State Medical Association of Arkansas, Texas and Louisiana, held in Marshall, November 13 and 14, the following officers were elected: President, Dr. Holman Taylor, Marshall, Texas; vice-presidents, Drs. Arthur U. Williams, Hot Springs, Ark.; John L. Wilson, Alexandria, La., and Joseph D. Boston, Greenville, Texas; secretary, Dr. Robert H. T. Mann, Texarkana, Ark., and treasurer, Dr. Isaac M. Calloway, Shreveport, La. The association will meet in Shreveport next year.

UTAH.

Acquitted.—The case of Dr. George H. Herbert, Richfield, charged with the unlawful practice of medicine, is reported to have been decided by the jury in favor of the defendant, October 22.

Communicable Diseases.—Typhoid fever is reported to be epidemic throughout the entire southern portion of the state. In Spring City and Fountain Green the greatest number of cases was found.——Diphtheria is reported to be epidemic in Salt Lake City. During the week ended November 10, 9 cases were reported, and up to that time 17 patients were under quarantine.

Presents Library.—Dr. Charles G. Plummer, Salt Lake City, has presented to the University of Utah a collection of books on medicine and surgery, as a nucleus of a medical library. Arrangements are being made to have a room in the museum building fitted up for library purposes, which will be available not only for medical students, but for the profession of Salt Lake and its neighborhood.

Personal.—Drs. W. Brown Ewing, Edward V. Silver, Charles G. Plummer, Theodore B. Beatty and Roy R. Hampton, Salt Lake City, have been appointed probation officers in connection with the commission to investigate the mental condition of children in Salt Lake City brought before the Juvenile Court.——Dr. Samuel H. Allen, of the medical staff of the Latter Day Saints' Hospital, Salt Lake City, has gone to Europe.——Dr. and Mrs. Walter M. Stookey, Lehi, left for Europe November 22.

WASHINGTON.

Personal.—Dr. Frederick A. Cook, Brooklyn, on his return from the ascent of Mount McKinley, was tendered a reception in Seattle, November 9, at the Alaska Club.

Illegal Practice.—The Spokane County Medical Society, at its November meeting, discussed the advisability of calling the prosecuting attorney's attention to the practice of the so-called "healers" in eastern Washington. It was the consensus of opinion at the meeting that the illegal practice of medicine and medical advertising should be stopped.

Typhoid Fever.—The typhoid fever epidemic, from which Hoquiam has been suffering, is reported to be subsiding.——Typhoid fever is reported to be prevalent in Malaga. Three deaths have occurred and 11 patients are suffering from the disease.——Typhoid fever is reported to be prevalent in Harrington.——Thirty-nine cases of typhoid fever were reported in Walla Walla during October.

State Board Report.—Dr. Elmer E. Heg, Seattle, secretary of the State Board of Health, in his biennial report, recommends changes in the health laws which will authorize the health authorities to take charge of contagious diseases under the supervision of the board; asks for an act giving the board control of the water supply for domestic purposes; asks for the establishment of bacteriologic experimental stations; asks for the establishment of tuberculosis sanatoria, and suggests that the methods of collecting vital statistics be so changed that they conform to the methods and meet with the approval of the United States Census Bureau.

WISCONSIN.

Personal.—Dr. Adolph Gunderson, La Crosse, who was bitten by a dog thought to be rabid, has gone to the Pasteur Institute, Chicago, for treatment.——Dr. Henry Rhode, Green Bay, has had a successful operation performed for cataract.

Suit Against Physician Dismissed.—Judge Tarrant, on November 7, dismissed by stipulation the damage suit of Robert Koerber against Dr. Arthur J. Patek, Milwaukee, in which a new trial was ordered, after Koerber had been awarded a verdict of $813.65 against the physician.

Crusade Against Illegal Practitioners.—On initiative taken by the State Board of Health, the district attorney of Milwaukee has issued warrants for the arrest of five practitioners of Milwaukee who are said to have no license from the state board, no diplomas from reputable medical colleges and no diplomas or other recognized credentials on which to base their right to practice medicine.

Epidemic Diseases.—Lakewood, Oconto County, is reported to be suffering from a severe epidemic of typhoid fever.——Milwaukee reports 100 cases of typhoid fever and claims that the public water supply is not contaminated.——The report has been made to the health department of Milwaukee that there are six cases of smallpox in one family.——Eight cases of smallpox are reported at Warsaw and nine at Easton.——Several cases of smallpox are reported in Two Rivers.

GENERAL.

The Yellow Fever Condition in Cuba.—By telegram as we go to press we learn that there were eight new cases of yellow fever reported in Havana and three in the provinces during the week ended November 27.

Less Cholera in Manila.—Dr. V. Heiser, chief quarantine officer, reports that the cholera situation in Luzon and Manila is improved. During the week covered by his report in the provinces there were 121 cases with 87 deaths, as against 120 cases and 94 deaths for the preceding week. The presence of cholera in the province of Iloilo has been definitely confirmed by the examinations made by the bureau of science of cultures which were forwarded from Iloilo.

Prize Essay on Epilepsy.—Dr. W. P. Spratling announces a prize of $500 offered by the Association for the Study of Epilepsy for the best essay on the etiology of epilepsy. The money is provided by persons interested in the work of the association. All essays submitted must be in English, must not contain more than 15,000 words, and must be sent to Dr. W. P. Spratling, Sonyea, N. Y., by Sept. 1, 1907. The name of the person submitting the essay must not appear on it, but must be put in a sealed envelope on which is written a motto, which motto should also appear at the top of the first page of the essay.

Annual Meeting of the Porto Rico Medical Association.—The members of the Porto Rico Medical Association gathered at San Juan, October 7, for the third annual meeting, Dr. A. Stahl in the chair. The president referred to the great work that had been done by the profession in regard to uncinariasis, and the present study of a morbid entity new in the pathology of the island, owing to its atypical manifestations. A communication on this subject by Muñoz Diaz classified the disease in question as "spurious typhoid," the typical syndrome being conspicuously lacking and yet the microscopic diagnosis establishing the typhoid nature of the affection. He has also had occasion to observe various other atypical morbid entities traced finally to the malarial parasite by its discovery with the microscope. Among other speakers were Stokes, Lippit, de Quevedo, Figueroa and Lopez. The *Boletin de la Asociacion Medica de Pto.-Rico* for October contains some of the communications and also a diagram showing the increasing death rate in San Juan during the last two years owing to the progressive insanitary condition of the city. The mortality was 406 in 1904, 1,125 in 1905, and 608 during the first six months of 1906.

Report of the Surgeon General of the Army.—Surgeon-General O'Reilly, in his annual report for the year ending June 30, 1906, discusses the general health and sanitary conditions of the Army during that period. Venereal diseases were by far the most important in affecting the efficiency of the Army. Next in order was malaria, which showed a slightly increased admission rate as compared with the previous year. The class

of diseases showing a most decided improvement were the diarrheal affections. As a cause of death tuberculosis led, with a rate of 0.68, a slight increase compared with the previous year; pneumonia was second, with a rate of 0.32. As a cause of discharge for disability venereal diseases led with a rate of 3.41. The principal causes of discharge, with the number for each, were: Venereal diseases, 199; tuberculosis, 157; defective vision, 134; organic heart diseases, 107; insanity, 78, and hernia, 68. Sixty per cent. of the discharges were for disabilities not incurred in line of duty, and of these 72 per cent. were contracted before enlistment. With regard to special diseases, the rates of admission to hospital were better than in most other armies in the following instances: Bronchitis, pleurisy, pneumonia, tuberculosis, erysipelas, sunstroke, relapsing fever, scarlatina and trachoma. They were much higher than in any other army in the following: Alcoholism, dysentery, gonorrhea, syphilis (British army excepted). The only diseases in which the rates were better in the American than in the Prussian army were pleurisy, pneumonia, erysipelas, scarlatina and trachoma. While the admission rate for dysentery in the British army was less than half that of the American Army, the death rate was greater for the former. The death rates for malaria in the British, Dutch, Russian and Spanish armies were also greater than in the American Army, although the corresponding admission rates (except British) were much lower.

Professor von Rosthorn's Impressions of the Boston Session.—The October *Monatsschrift f. Geb. u. Gyn.* contains an article by Prof. A. von Rosthorn, one of its editors, and one of the foreign guests at the Boston session of the American Medical Association, describing his impressions of Boston and of the session. He says Boston "is of peculiar interest to obstetricians, as here in 1843, and thus before Semmelweis, the contagiousness of puerperal fever was first taught in the most decided manner. The communications and conclusions published by Oliver Wendell Holmes on the subject rank among the finest contributions to American medical literature both in content and style." He adds that notwithstanding Holmes' convincing arguments the new conception encountered as rabid opposition from prominent medical authorities here as did the same idea when conceived and announced by Semmelweis a few years later in Europe. Rosthorn refers to the American Medical Association (*Amerikanische ärztliche Gesellschaft*), as the largest medical organization in the world. He gives a summary of the work in the Section on Obstetrics and Diseases of Women, emphasizing the restless energy with which American gynecologists are studying the various questions of the day and striving to perfect themselves in all directions. He followed the successful proceedings, he says, "with the greatest interest, the general impression—even on a very critical observer—being of the most favorable kind." He adds: "They suggested to the German guest the possibility that sooner or later the Americans will surpass German science, as the land has such inexhaustible riches, and the Americans show such a wealth of talents and gifts, and are working with truly intensive efforts to model their higher institutions of learning on the pattern of the German universities and thus utilize every possible factor in the training of youth and the cultivation of science." He continues: "The United States already possesses in the medical school at Baltimore (Johns Hopkins) an institution which is a model in every respect, and which has already attracted the attention of the entire world by what it has accomplished, ably competing with the best medical departments in the German universities. Theoretical research is here given due respect and prominence. Here blooms a school in the finest sense of the term. Numerous graduates from this school are, besides, already actively at work in the various universities of the land to promote its ideals elsewhere. If the view also cherished there that thorough training in the natural sciences is the best endowment for the further work of the newly fledged physician, if this view becomes more widely accepted and the medical schools of America develop and extend to correspond with it, who can foresee what grand results in this line may follow in this land which already leads the world in so many respects."

"Hier wird auch die theoretische Seite der Forschung entsprechend gepflegt und gewürdigt, und in den Dienst der praktischen Disziplinen gestellt. Hier erblüht eine Schule im schönsten Sinne des Wortes. Zahlreiche Jünger derselben sind übrigens schon an den verschiedensten Universitäten des Landes tätig, um in analog förderlicher Weise zu wirken. Gewinnt aber die auch dort vertretene Anschauung, dass eine sorgfältige, naturwissenschaftliche Ausbildung des jungen Mediziners die beste Mitgift für seine fernere Tätigkeit darstelle, eine allgemeinere breitere Basis und damit die Ausgestaltung des medizinischen Hochschulunterrichtes Amerikas in diesem Sinne eine weitere Ausdehnung, dann ist nicht absunehen, was diesem in so vielem voranschreitenden Lande auch auf diesem Gebiete noch Weiteres, Grosses zu leisten vorbehalten ist."

CANADA.

Donation to Consumption Sanatorium.—Messrs. J. B. and J. J. Grafton of Dundas, Ontario (near Hamilton), have given $5,000 to the Hamilton Health Association to be expended on the consumption sanatorium.

University News.—The Medical Faculty of Toronto University has elected the following members of their staff to serve on the University Senate: Drs. D. J. Gibb Wishart, James F. W. Ross, George A. Bingham and Irving H. Cameron.

Unauthorised Use of Physician's Name.—Prof. J. George Adami of McGill University, Montreal, states that his name has been used without authority in connection with the meetings of the American International Tuberculosis Congress and the American Antituberculosis League.

Personal.—The Medical Council of British Columbia at its recent session refused to replace the name of Dr. Robert E. Telford of Vancouver, some time since removed for unprofessional conduct.——Dr. C. J. Fagan and Dr. J. C. Davie, Victoria, B. C., recently delivered addresses on tuberculosis before the board of trade of Victoria, B. C.——Dr. E. K. Purvis, Toronto, has gone to England to attend Moorfield's for a course in the eye, ear, nose and throat.——Dr. A. T. Bazin, Montreal, has gone to England for several months' study.——Dr. Edmund E. King, Toronto, has been unanimously elected a member of the Ontario Medical Council for East Toronto.

FOREIGN.

Variola in Argentine Republic.—According to late reports from Buenos Ayres, variola has assumed an epidemic form in that city and in the surrounding districts. All passengers leaving Rio de Janeiro and Santos for Argentine ports are required to be vaccinated before entering that republic.

Scottish Association of Medical Women.—The annual meeting of this association was held in Faculty Hall, Glasgow, during the first week in November. According to its constitution, the association has been formed: 1, To form a bond of union between the registered medical women in Scotland; and 2, to have an organization which can deal with questions of importance to women physicians.

Lunacy Decreasing in London.—It is gathered from the annual report of the Asylums Committee of the London County Council, recently issued, that there has been a progressive lessening of the rate of increase in pauper lunatics through two consecutive years, although the totals, on the whole, have increased. In 1905 there were 24,632 lunatics in the pauper asylums of London, and in 1906 there were 24,957.

Improvements in Siam.—Dr. Paul G. Woolley, Phrapatoom, reports that Siam seems to be improving gradually. The opium, and especially the morphin trade, is causing some governmental stir, and the serum laboratory, he states, has put new life into the work of vaccinating against smallpox. A general meeting of the medical missionaries was held to consider the problem of wholesale vaccination. The laboratory hopes to attack plague and cholera in the same wholesale fashion in the future.

Pauperism in London.—According to the report of the London Local Government Board issued recently, the number of indoor and outdoor paupers chargeable to the rates of London on Jan. 1, 1906, was 129,284, yielding a rate of 31.7 per 1,000 of the population, compared with 27.1 for the rest of England. This is the heaviest pauperism rate known in London for 25 years. The cost of maintaining a pauper for a year in London works out at about $140, whereas in the rest of England, the cost *per capita* is only $70, or half that of London. During the past twenty-five years pauperism has declined in England as a whole, but has increased in London.

New Missionary Hospital in Syria.—It is reported that the Protestant college at Beirut is attempting to build a new hospital to be used in connection with its work, but is meeting with difficulty. Custom prevailing in the country requires that all plans for building be submitted to the palace authorities at Constantinople. This has been done, but so far permission to build has not been granted. The French have an arrangement with the government whereby they are permitted to build six months after date of notification to Constantinople. The Syrian Protestant College has claimed this privilege for an American undertaking and has begun construction of the new hospital though with the knowledge that the work may be stopped at any time. It is hoped that there will be no interference and that the building will be completed next fall. It is to be a plain stone edifice and will contain 40 beds.

Formaldehyd in Smoked Meat.—The present French law prohibits absolutely the slightest admixture of formaldehyd in any article of food or drink. The *Semaine Méd.*, however,

calls attention to recent research which has demonstrated the presence of formaldehyd in the air (Henriet) and in wood smoke (Trillat). The antiseptic properties of smoke are attributed in part by certain chemists to its formaldehyd content. A. Haller has been studying various smoked meats, ham, sausages, etc., and he found formaldehyd constantly present in amounts ranging from 0.0026 gm. to 0.0003 gm. in 100 gm. of the product. These figures probably are below the actual amounts, as it is difficult to recover the formaldehyd completely. Consequently the French law as it now stands prohibits the use of foods not intended when the law was passed, and its revision is urgently demanded. The regulation should state the maximal limit beyond which formaldehyd content is prohibited.

LONDON LETTER.

(*From Our Regular Correspondent.*)

LONDON, Nov. 14, 1906.

The Protection of Milk.

In view of the many sources of pollution to which milk is frequently exposed before it reaches the consumer and of the extent to which it may become a vehicle of disease, the Royal Institute of Public Health has appointed a committee composed of health officers, bacteriologists and representatives of the milk trade to consider what steps should be taken with the object of securing purity of the supply. The report of this committee has just been published. It points out that the chief means of legal control of the milk trade are now obtained under the clauses of the dairies, cow sheds and milk shop order of 1885 and the subsequent amending orders. While the powers contained in these orders are not nearly so stringent as those in operation in many of the British colonies, the committee is of the opinion that if they were carried out firmly and uniformly sufficient control of the trade would be obtained. In the course of the inquiry an endeavor was made to obtain information as to the enforcement of the existing orders in different parts of the kingdom. It was found that in a large majority of rural districts they are practically inoperative. In these circumstances the committee was of the opinion that when the local sanitary authority is in default the obligation to enforce the orders should devolve on the county council and that the power to make regulations should be compulsory and not permissive.

The Committee on Industrial Diseases.

A committee appointed by the government to inquire and report what diseases and injuries other than injuries by accident are due to industrial occupations and are not already included in the Workmen's Compensation bill of 1906, has begun its inquiry. The committee proposes to investigate the following diseases and injuries which have been suggested for its consideration: Gradual poisoning from the vapor of carbon bisulphid, dinitrobenzol, dinitrotoluol and anilin; gradual poisoning from carbonic oxid, sulphuretted hydrogen and chlorin gas; alkaloidal poisoning from African box wood in shuttle making; illness set up by nitrous fumes, hydrochloric acid fumes, ammonium chlorid fumes and sulphur fumes; compressed air illness (caisson disease); chrome ulceration of the skin; various trade eczemas, fibrosis of the lungs from inhalation of silicious or metallic particles (potter's asthma and grinder's phthisis); pneumonia from inhalation of basic slag dust; miner's nystagmus and miner's "beat knee" and "beat hand;" neurosis due to vibration; cardiac dilatation in slate quarries, and glanders. Thus it will be seen that the object is to bring every possible injury or disease arising from an industrial occupation within the scope of the Workmen's Compensation bill.

Great Increase of Leprosy in Cape Colony.

The report of the health officer for Cape Colony contains statements as to the increasing prevalence of leprosy which are of a grave character. Dr. Gregory writes: "The Leprosy Repression act has now been in force for the last 15 years, but so far no sensible diminution in the stream of lepers annually coming to light has been made by its operations." The large leper establishments at Robben Island and Emjanyana are full. At present there can not be less than 1,000 lepers at large. The cause of this large number of unsegregated lepers is the total inadequacy of the present asylum accommodation. The increase has been steadily going on for many years and involves both the native territory and the colony proper. Although chiefly occurring in the colored races the disease is not confined to them. Of a total of 432 registered lepers known to be at large 13 are Europeans. The sufferers appear to be scattered over the various districts of the colony. Mr. Jonathan Hutchinson uses these facts to point the moral of his persistent teaching—the uselessness of segregation. He compares the health authorities of Cape Colony to "the wise men of Gotham" who built an enclosure in which to keep a cuckoo. The bird flew over the wall. "But," said they, "it only just got over; if we had built a yard higher it could not have got out." This is exactly what the health authorities have done and persevere in doing. Hemel-en-Aarda was not big enough and Robben Island was inaugurated. The Emjanyana was constituted and to it was added an asylum at Pretoria.

VIENNA LETTER.

(*From Our Regular Correspondent.*)

VIENNA, Oct. 30, 1906.

The Antialcohol Movement Among Students and Practitioners.

The zeal and the example set by a few earnest workers in the movement for the restriction of the consumption of alcohol have been amply rewarded by the results, as was recently shown by the report of the president of the Vienna "Gesellschaft der Abstinenten," which includes members from all classes of society. The latest addition to the forces of antialcoholism is the club of abstaining students, which was founded a short time ago, and which has now upward of 225 members. When the fact is taken into consideration that among German students drinking is regarded as an indispensable part of a university education, the radical change of opinion can be estimated. These students will refrain from the use of alcohol in practicing their profession. Another club, which does not boast of a very large number of members, is the club of abstaining practitioners, among whom are several hospital medical officers. The present way of thinking has brought it about that in the routine treatment of internal diseases all alcoholic beverages are being slowly discarded. Thus in the clinics of Professors Monti and Kovacs the use of brandy or wine, which was frequently prescribed in pneumonia, has been dropped without any other effect than the saving of money. It seems that not so much the liquor itself as the knowledge of its presence and its supposed beneficial action tended to demoralize the patients. The admission of female doctors to the wards of our large hospitals may also be responsible for the decrease in the prescribing of alcohol, as all the medical women are members of the temperance society.

A Broken Thermometer in the Rectum of a Child.

Dr Friedjung recently showed to the clinical society a child, to whom he had been called for the purpose of extracting the fragments of a thermometer lost in its rectum. The mother of the child had instructions to take the temperature every evening, and while doing so one night, only the lower half of the instrument came away, the upper, longer portion, with very sharp, ragged edges, remaining in the rectum out of reach and of sight. Friedjung thought of extraction by means of a rectoscope or a nasal speculum, preferably under an anesthetic, but decided to wait for a while to see if it would not come out without resort to surgical interference. After about thirty-five minutes the fragment came out of the rectum, without any difficulty; not a single drop of blood was visible, and the child was kept under close observation for weeks, without any signs of injury to the rectum becoming apparent. The edges of the two fragments fitted into each other exactly, so that he was sure nothing had been left behind. There is no case on record of the breaking of a thermometer in the mouth or anus. The reason in the case mentioned seems to have been that the mother had dipped the instrument into hot water and the glass must have cracked then.

Correspondence

The Contract Problem and Its Solution.

DEPEW, N. Y., Nov. 19, 1906.

To the Editor:—The solution of the contract practice problem would result in more real good to the medical profession than that of any other problem that confronts us. As this contract problem concerns all, all should shoulder arms and come to the rescue before it is too late. If all those interested or who have some ideas on this contract question would furnish some practical advice through THE JOURNAL, it would not only benefit the local medical society referred to, but it might result in a practical solution of the contract problem, thus saving the dignity and honor of our profession.

Some ten years ago the physicians of Depew and Lancaster got together and organized themselves into a medical society,

known as the Central Medical Association. When this medical society was formed its constitution contained a clause forbidding any member from doing contract work or acting as a "lodge physician." Accordingly, every physician that was then acting as a "lodge physician" resigned, leaving the lodges without any physician, and all went well. All of the lodges gracefully submitted to the condition except the Foresters, who went to a neighboring town and secured the services of a physician.

After about five years of this professional freedom, dignity and courtesy, a new physician came to town and, knowing the condition of affairs, chose the lodges as a means of getting acquainted and building up a practice. This new "lodge doctor" shattered the dignity of our little medical society and took the contract nerve out of some of our members. Hence, when a new contract scheme reached our towns with its hook baited with the following tempting bait, it succeeded in catching all the fish desired. Here is the attractive contract scheme that attacked our professional integrity and successfully ruptured our ranks:

CASUALTY COMPANY OF AMERICA. HOME OFFICE: NEW YORK.

Policy No...... *Certificate No.*.....

FULL MEDICAL AND SURGICAL CERTIFICATE.

In consideration of the issuance by the *Casualty Company of America* of Policy above referred to and of the payment at the rate of five cents per week, same to be made at the time, place and manner of payment of premium for aforesaid policy, this certificate is hereby issued to

John Doe, of No. .....Street, City.....

State ..... subject to the following benefits:

1. The services of the undersigned doctor whenever and as often as in his judgment same shall be required, on account of any illness or injury suffered by the person to whom this certificate is issued.
2. All medicines that the undersigned doctor shall deem necessary for the proper treatment of the illness or injury.

E. Z. Mark, M.D.

City..... State .....

No. .....Street, Telephone No.....

In Witness Whereof, the Company has caused these presents to be signed by its President and Secretary, but the same shall not be binding unless countersigned by a duly authorized agent.

..... Secretary. .....President.

Countersigned at ....

this....day of.....190.. Duly Authorized Agent.

At present there are about 2,000 men in Depew, Lancaster and vicinity that are professionally taken care of on this contract plan. About 600 men are treated by the lodge doctor and about 1,000 men employed in the New York Central railroad shop are looked after by the Y. M. C. A. Hospital and by an appointed physician. This leaves a few scattering "slop-overs" for the general practitioner, who has too much professional dignity to contract.

Now, I happen to be secretary of the Central Medical Association, and I have been informed by the lodge doctors and the contract doctors of our vicinity that they have enough of the contract work and would give it up, but the Central Medical Association and the contract doctors alike believe that if the contract work were thrown down immediately, at the present time, it would simply mean three or four more contract physicians in our midst. What we desire is to have those physicians who have had experience with this contract problem advise us what move to make next.

Last May the Central Medical Association had a meeting, and all the physicians of Depew and Lancaster were present, and all agreed to do no more contract work after July 8 (last July), but the medical society has not as yet required the contract members to cancel their contracts, as the medical society is waiting for "something to turn up." This article is written with the vague hope that it may assist in "turning something up." We believe that if the physicians should resign at present it would simply mean imported contract physicians to take their places. It is a bad tangle and it is time to take up arms and do something.

I suggest this: Owing to the fact that shops or corporations that employ large numbers of men wish and strive to have their men insured against accident, to protect themselves from damage suits arising from injury of their employés, let the medical fraternity, through the American Medical Association, organize an accident insurance and casualty company of their own, and furnish the shops and corporations with the desired protection, thus making the money that the insurance companies are now making. All insurance and casualty work depends on physicians, therefore why not have it controlled by physicians?

If physicians had an insurance company of their own, protecting the shops and corporations, the surgical services could be arranged for on the fee basis, thus doing away with the "contract doctor."

This is only a suggestion, made with the vague hope of piercing the heart of a monster that is sapping the life blood of our profession. As it concerns all, all should take up the cry before it is too late, and down the contract monster before it completely prostrates us. What assistance have you to offer?

George N. Jack.

The Migratory Needle Story.

Wheeling, W. Va., Nov. 17, 1906.

To the Editor:—The editorial with the above caption, in The Journal, November 17, prompts the relation of the following circumstance:

About 20 years ago a woman, aged 60, consulted me in regard to an obscure discomfort, amounting at times to pain, which she experienced in one of her legs. As there existed a moderate varicose condition of the veins, and as there did not appear to be any other probable cause for the trouble, I suggested that she try an elastic bandage. Instead of relief, this caused a considerable increase in the degree of discomfort. Having worn the bandage for a few days only, she took it off one day to take a bath. While in the bathtub, on passing her hand over the outer aspect of the upper third of the thigh, where she felt a little soreness, she was startled and alarmed by something sharp and pointed scratching her hand. I was hurriedly sent for, but before I could reach the house she had called in a physician who resided next door. When I arrived this physician had just extracted a needle from the thigh, with his fingers. The needle, which was point first, was entire, perfectly smooth and polished, with the point very sharp, and colored as if it had been "blued." The symptoms, needleless to say (Can you forgive this?) disappeared.

One night, when a girl of 12, she jumped barefoot from her bed to the floor, and felt a sharp pain in her heel, as if something had penetrated it. As the resulting pain and disability were extreme, physicians were called in, and an extended search by free incision and probing was made, but nothing was found. As a result of the injury and the exploratory operation, it was many weeks before she was able to walk, but she finally recovered, and the incident gradually faded from her memory, until vividly recalled, 48 years afterward, as here narrated. The pressure of the bandage no doubt occasioned, or at least hastened, the passage of the needle through the skin, and had it not been applied I might not have had this story to tell.

L. D. Wilson.

Chicago, Nov. 17, 1906.

To the Editor:—The editorial entitled "The Migratory Needle Story" implies a doubt as to the authenticity of most of them, and I wish to relate an experience I have had.

On the Fourth of July, 1898, while teasing a young girl who was visiting my house, she pointed her hatpin at me and I ran for the stairs, she following. She made a lunge at me, intending to prick me, but I put up my arm and the pin entered the flesh and broke. We found two pieces, but three inches of the pin and the pointed end were missing.

I removed my clothing immediately, but could find nothing but the hole in the skin where the pin had entered. The next day I went to St. Luke's Hospital, where Dr. Owens made a long and deep incision in the arm and looked in vain for the hatpin. My arm was sore for a few days afterward and then all pain disappeared and I concluded that the pin did not remain in my arm after all. I did not have an *x*-ray examination.

About five months later I noticed a peculiar pricking sensation in my back on the right side, at the lower margin of the scapula. This sensation remained for several days and gradually disapppeared, to return again the latter part of June, 1899.

When I awoke on the morning of July 1 I felt a sharp pricking in my back under the scapula and, placing my finger on the spot, felt a bulging outward of the skin. Pressing the skin backward with two fingers, one on either side of the swelling, I forced out a sharp pointed something. I called to my brother to come and bring my forceps. He came and pulled out of my back the lost piece of hatpin. It measured exactly three inches in length. It went into my right arm at the lower margin of the deltoid and came out of my back one year later. I never felt it except for the soreness of the first few days and the pricking sensation above referred to. It did not affect my health in any way. I have preserved the hatpin.

J. D. McGowan.

Fort Dodge, Iowa, Nov. 20, 1906.

To the Editor:—Noticing your editorial in The Journal, November 17, I am reminded of a few cases which have fallen under my observation bearing on the subject.

In 1885 I reported a case in a contemporary journal which was followed by reports of similar cases from other physicians. The phenomena of migration of sharp objects through the various tissues of the body are not rare, neither are these stories wholly the product of newspaper reporters' imagination, but are abundantly proved by scientific observation.

Case 1.—A girl, aged 18, came into my office with the following history: Her mother, that morning, in taking hold of her arm for the purpose of waking her, noticed a hardened spot which caused some pain on pressure. The girl herself had never noticed it before. On examining the arm I found a small, hard nodule, slightly pointed, resisting to the touch and slightly painful. There were no signs of inflammation. The skin was not even flushed. I cut into it with a scalpel and extracted a needle with a pair of forceps. On questioning the girl and her mother I was told of a circumstance when the girl was 5 years of age, at which time it was thought she had swallowed a needle. The child had been given a needle with which to sew. After a time she came to her mother complaining that there was something in her throat. The mother at once asked for the needle, which could not be found, the child explaining that it had gone down her throat. As the child continued in her usual health the incident was soon forgotten. This may or it may not have been the explanation of its presence in the arm.

Case 2.—A woman, aged 40, had been picking gooseberries and thought she must have pricked her abdomen with a thorn, although she had no recollection of having done so. Her attention had been attracted to the spot that morning while dressing. I found a small hard nodule about four inches from the right side of the umbilicus on the right side. I excised it and removed a rusty needle with the point broken off. The woman could give no explanation of its presence in her body.

Case 3.—A woman had a badly swollen hand, between the third and fourth metacarpal bones of which a sharp point projected directly underneath the skin. With a slight incision and forceps I extracted a needle of ordinary size, covered with rust. She had noticed the first symptoms of inflammation about a week before consulting me. She had never had the hand injured and was greatly surprised and mystified at the presence of the needle.

Sara A. Kimr, M.D.

Friars Point, Miss., Nov. 22, 1906.

To the Editor:—I report a case that came under my observation which seems to prove the editorial partly in the wrong. In 1877 a druggist's wife sent for me to see her baby, aged three months. She told me the baby had something in his leg that felt like a needle. On the under or back side of the thigh just below the hip joint I found a substance imbedded in the tissues that felt like a needle. I grasped the leg in my left hand and cut down on what looked to be the end of a needle. In attempting to catch it with a small forceps it slipped from my grasp and I could not find it again. I told the mother it would make its appearance again and instructed her to watch for it and let me know when she found it. Six weeks later she sent for me, saying she had found the needle. I took from the tissues, just above Poupart's ligament, a whole needle. It had not crossed the body, however, as it was on the same side as when first discovered. If this was the same needle it had never given the little fellow any pain or inconvenience in its travels from the under side of the leg around the thigh and up into the lower abdominal wall. I am convinced that it was the same, as most thorough and repeated examinations have failed to show any indications of another needle.

H. C. Buck, M.D.

Milk in Typhoid Fever.

Buffalo, N. Y., Nov. 17, 1906.

To the Editor:—On page 1615 of The Journal, Nov. 17, 1906, Dr. W. F. Church says: "One author (Benedict) objects to milk on account of its constipating effects and at the same time complains of the excess of fat which tends to prevent constipation." I can not remember ever writing any such paragraph and, indeed, always try to avoid inconsistency in the same paragraph. Experience, not theory, teaches that milk usually is constipating unless it favors conditions of alimentary saprophytosis that cause diarrhea. Experience also teaches that the comparatively small proportion and minute emulsion of fat in milk does not have the opposite tendency in the practical sense. According to the indications of a case, one must necessarily be so inconsistent as to complain, now of the excess, now of the deficit, of any one ingredient of any single foodstuff. Dr. Church has missed the point of what I have said, at various times, regarding milk diet in typhoid. The fat is not, in and of itself excessive; indeed, rather the opposite, in regard to the proportion of water in milk. But when we have given enough milk to get an adequate fat ration we have also given a full or, perhaps (the word perhaps really indicates uncertainty) slightly excessive proteid ration but only a third or a quarter of the carbohydrate ration desired. To give a full carbohydrate ration in typhoid, on an exclusive milk diet, we should have to introduce nearly 10 liters. Supposing this to be feasible, we might say that the fat, and also the proteid, was excessive and, *a fortiori*, that the water was excessive. Even to get a sufficient number of calories we should have to administer 3 to 4 liters of milk, which is too large a bulk and, while the proteid may be considered as compensatory to the tissue waste, it is objectionable as favoring intestinal putrefaction and adding to the potential autointoxication from catabolic processes alone. Even ignoring this point, the normal ratio of fats to carbohydrates is about 1 to 8 or, at least, 1 to 4, and here we would have a ratio of approximately 1 to 1.

A. L. Benedict.

Miscellany

Italian Congress for Internal Medicine.—The sixteenth annual congress met at Rome, October 25-28, Guido Baccelli presiding. His address was devoted principally to the dangers of excessive specializing and the flood of pharmaceutic specialties, of which he said that they "seem to-day to be mainly an industrial speculation." He deplored the frequent tendency to specialize before acquiring the solid foundation necessary for specialization. "The branch can not isolate itself from the life of the trunk and the roots." All must cooperate, with frequent interchange of opinions and experiences. "Fusion between the scientific bases and clinical skill, cooperative action and mutuality, these are the essentials for progress. Harmony in the complexity of work and life lights the way to the conquest of new truths." He touched on recent achievements of internal medicine, such as the diagnosis of malignant neoplasm of the lymphatic glands in the posterior mediastinum from the inverted course of the intercostal veins from occlusion of the azygos veins, with persisting effusion in the right pleural sac. To internal medicine is due also the achievements in the care of the public health, and to an Italian, Magaldi, the proposal that the laws regulating indemnity and relief for wage-earners injured while at work should be extended to include those suffering from professional affections. Castellino of Naples opened the program with an address on "Arthritism." He applies this term to a general and

fundamental disturbance due to vague elements without much connection between them but which, combined, represent a predisposition which induces exaggerated morbidity in response to trivial causes. The predisposing cause is single and unique; the casual etiologic factor determines the variety of the morbid manifestations. De Giovanni calls arthritism a general neurosis, inducing a kind of inhibition of the metabolic processes, with secondary disturbances from intoxication of the nervous system in turn. He classifies mankind as the "microsplanchnics," with long, narrow growth, and insufficient development of the splanchnic organs—the tuberculous belong to this group; the "megalosplanchnics" short and broad, with over-development of the splanchnic organs—this includes the arthritics; normal individuals with harmonious development of all the parts. This morphologic conception of the heredity of arthritism was said by several speakers to offer the key to numerous problems. Uric acid is not the whole of arthritism. Many gouty individuals have no excess of uric acid. De Giovanni is inclined to ascribe the cause of arthritism to the white tissues, a feature in common between certain arthritics, fowls and serpents. In the discussion of arteriosclerosis Galli called attention to the diversity of the findings with the sphygmomanometer according as the size of the cuff varies. He urged the adoption of a standard width for the cuff, suggesting 15 cm. Queirolo remarked that in his experience cerebral hemorrhage was most frequent between 45 and 60, and rare after that age. In most of his cases, even the fatal ones, the arterial pressure had not been high, showing that hypertension is not an inseparable accompaniment of arteriosclerosis. Several speakers maintained that the arterial pressure is a subordinate factor in arteriosclerosis. Ferrannini of Naples called attention to the opposite conclusions reached at recent German and French congresses in discussing this theme. Riva and Maragliano ascribe the sclerous changes to a primary affection of the parenchyma of some organ from some toxic, infectious, physical or nervous agency, with arteriosclerosis of the adjoining vessels as a secondary process. Tedeschi protested against assuming that there was only one type of arteriosclerosis, maintaining that they are legion, and citing instances of arteriosclerosis of the superior mesenteric artery which produced a syndrome simulating ileus or appendicitis, and, when the stomach vessels were involved, simulating gastric ulcer. Colombo reported cases in which arteriosclerotic hemorrhage into the bronchi simulated tuberculous hemoptysis. The blood pressure was high and the hemorrhage resisted ergot but yielded to gelatin or iodin. The third question on the order of the day was "Diseases Suggesting Typhoid." Lucatello reviewed the various aids to diagnosis, concluding that strict clinical examination with severe criticism of the symptoms is still the best means to arrive at the diagnosis, there being no unfailing characteristics of typhoid or of diseases suggesting it. In cryptogenic puerperal infection, however, simulating typhoid, the pleura will be found frequently the seat of the first indications of metastasis. In differentiating pseudotyphoid influenza he recommends lecithin for the culture media and an aqueous emulsion of Pfeiffer bacilli. He believes that the paratyphoid affections are merely a mild atypical form of typhoid. Bernabei reported excellent results from injection of oxygen into the intestines in treatment of osteomalacia. In cases of osteolysis, he stated, the amount of phosphorus eliminated in the stools is three or four times the normal proportion, but after injection of oxygen the amount gradually subsides to normal proportions and the bones regain their normal consistency and cease to be tender, allowing the formerly bedridden patients to get up and walk. Signorelli called attention to the hypertrophy of the sterno-cleido-mastoid muscle which is liable to be an early sign of aneurism of the arch of the aorta. He found it constant in five cases, and ascribes it to ascending degeneration of the vagus. Massalongo announced that he has found deprivation of salt sufficient alone to banish the symptoms of asystolia. It has also been his experience that restriction of salt is very useful in preventing or retarding the development of symptoms of insufficiency on the part of the heart in case of cardiac disease; it seems to help in maintaining compensation. The *Semaine Méd.* published a good report of the congress in French in Nos. 44 and 45, but the Italian *Gazzetta degli Ospedali* is publishing a more detailed account.

Treatment of Sciatica with Perineural Saline Injections.—Grossmann reviews the history of this method of treating neuralgia, and then describes his experiences with it. He has treated 15 patients with severe and chronic sciatica, and all were relieved at once of the pain. This striking result is not always permanent. The pain returns sometimes in a milder form, but is then amenable to such measures as superheated air, mud baths, hot packs, leeches and the like. No by-effects were noted in any case. The prompt action in banishing the pain, he declares, certainly justifies the use of this simple and harmless measure. He used a 0.6 per cent. salt solution, injecting from 50 to 100 gm. The patient complains of pain in the limb and tingling as the needle approaches the nerve. In a few instances the injection was repeated. All but one of his patients were cured or materially improved.—*Wien. klin. Wochschr.* for October 18.

Mortality Among Children of Women Working in Tobacco.—Bourneville relates three instances of families with one imbecile child and only one healthy child out of from seven to ten pregnancies, the other children being born dead or dying of meningitis within a few days or months, or of convulsions before the age of 3. The mothers were employed in tobacco factories. Abortions occurred in some cases. Livon of Marseilles has also observed similar cases of numerous births and abortions among women working on tobacco, 10 abortions in one family in 10 pregnancies. Bourneville says in a recent issue of the *Progrès Méd.*, that the women working in tobacco factories tell him, "we are all like that; we have lots of children, but we lose them all or have only one live."

Diphtheric Ophthalmia.—During the last eight years 42 cases of diphtheric ophthalmia were treated at the Zurich eye infirmary in Switzerland, in charge of Haab. Nearly half of the patients were infants; 13 were under 2 years, and 9 from 2 to 7 years old. There was membrane formation in every case, but diphtheria bacilli were found in only 83 per cent. Antitoxin was injected in 25 cases, and 19 of the patients recovered without complications, but 6 had perforating ulcers of the cornea and 2 died of pneumonia. Of the remaining 17, who did not receive antitoxin, 3 succumbed to pneumonia, one to diphtheria of the throat and one to glioma of the brain. The report is cited in the *Lancet*, Nov. 3, 1906.

Anatomic Appearances in the Living.—Maurice H. Richardson, in the *Interstate Medical Journal*, directs attention to the difficulty of making a correct diagnosis from the anatomic appearances, and states that the method of procedure in surgical operations depends, of course, on the diagnosis. If the diagnosis is made before operation it is frequently wrong, as shown by the first incision; and this in spite of the greatest knowledge, skill and experience, with every aid that the laboratory affords.

Marriages

J. W. Speer, M.D., to Miss Clara Luecker, both of Bullion, Wis., November 14.

Frank J. Fara, M.D., to Miss Julia M. Tupy, both of Chicago, November 21.

Robert Ross, M.D., to Miss Nellie Read, both of Canton, China, September 29.

Arthur Newlin, M.D., to Miss Janet Cuyler Sims, both of Philadelphia, November 14.

Leon G. Beeley, M.D., to Miss Sarah L. Peckover, both of Lawrence, Mass., November 14.

Joseph T. Asbury, M.D., to Miss Anna Myrtle Almy, both of Waubasha, Minn., November 8.

George Morris Golden, M.D., to Miss Lovana Vanneman, both of Philadelphia, November 14.

J. Henry Ludwig, M.D., Boyertown, Pa., to Miss Edwina Herbine of Earlville, Pa., recently.

Stephen Golphard Brazeau, M.D., to Miss Anna C. Williams, both of Asotin, Wash., November 7.

LESLIE WILLIAM MORSMAN, M.D., to Miss La Rhea Adell Secord, both of Omaha, November 2.

JULIUS A. SCHMIDT, M.D., Alton, Ky., to Mrs. Ortha Nelson, at Moulton, Ala., November 14.

JOSEPH H. KENEALY, M.D., Denver, to Miss Edith Seiler of Boston, at Alston, Mass., November 13.

ROBERT C. RANDOLPH, M.D., Millwood, Va., to Miss Isabelle Harrison of Philadelphia, November 14.

VERNON ADAMS DODD, M.D., Columbus, Ohio, to Miss Nellie Jacobs of Georgetown, Ohio, October 16.

WILLIAM R. HOUSTON, M.D., Augusta, Ga., to Miss Katharine Baker, both of Chicago, November 27.

HAMILTON H. WILCOX, M.D., Albert Lea, Minn., to Miss Lura Hydorn, near Cream, Minn., November 14.

D. L. WHITAKER, M.D., Johnstown, Colo., to Miss Dorris Anderson of Berthoud, Colo., in Boulder, Colo., recently.

ALFRED R. ROWE, M.D., Poplar Bluff, Mo., to Miss Clara Louise Cole of Savannah, Ga., in St. Louis, November 15.

HOWARD OSBORN, M.D., Rippon, W. Va., to Miss Lily Singleton Thomas, at Charlestown, W. Va., November 10.

LINWOOD D. BATKINS, M.D., to Miss Nannie Evelyn Johnson, both of Richmond, Va., at Washington, D. C., November 15.

WILLIAM W. RICHARDSON, M.D., Norristown, Pa., to Miss Lila McDonald of Marysville, Ohio, at Columbus, Ohio, November 13.

CHARLES S. ALBERTSON, M.D., South Whitley, Ind., to Miss Edna Dimmick of Benton Harbor, Mich., at Columbia City, Ind., November 15.

Deaths

William Muir Angney, M.D. Jefferson Medical College, Philadelphia, 1878; chief police surgeon of Philadelphia; appointed a medical inspector in the bureau of health in 1898; organizer and director of the special corps of vaccine physicians during the smallpox outbreak of 1902; physician to the Episcopal City Mission; visiting physician to the Hospital for Diseases of the Lungs, Chestnut Hill, and the Hospital for Male Consumptives of the House of Mercy; at one time resident physician of the Philadelphia Hospital, and for four years physician of the guardians of the poor; a member of the American Medical Association, Medical Society of the State of Pennsylvania, College of Physicians, Philadelphia County Medical Society, National Association for the Study and Prevention of Tuberculosis and Association of Military Surgeons of the United States; lieutenant and assistant surgeon, First Infantry, N. G. Pa., died at the Pennsylvania Hospital, November 19, from cancer of the stomach, after a prolonged illness.

Isaac Edmondson Atkinson, M.D. University of Maryland School of Medicine, Baltimore, 1865; clinical professor of dermatology from 1879 to 1881; professor of pathology from 1881 to 1886; professor of materia medica from 1886 to 1890; professor emeritus of therapeutics and clinical medicine from 1900 to 1906, and dean of the University of Maryland School of Medicine from 1890 to 1903; president of the Clinical Society of Maryland, and president of the Medical and Chirurgical Faculty of Maryland, and president of the American Dermatological Society, 1887-1888; consulting physician to Johns Hopkins Hospital; member of the Maryland lunacy commission; one of the authors of "Pepper's System of Medicine;" vaccine physician of Baltimore in 1883; superintendent of vaccination in 1883, and attending physician to Baltimore General and Special Dispensary; the leading family physician of Baltimore, died at his home in Baltimore, November 24, from pneumonia, after an illness of 13 days, aged 60.

S. Edwin Solly, Royal College of Surgeons, London, 1867; Society of Apothecaries, London, 1869; M.D. Denver College of Medicine, 1888; a member of the American Medical Association, British Medical Association; formerly president of the American Climatological Association, American Laryngological, Rhinological and Otological Association, Colorado State Medical Society and El Paso County Medical Society; fellow of the Royal-Medico-Chirurgical Society; director of the National Association for the Study and Prevention of Tuberculosis; author of "A Handbook of Medical Climatology;" director of Cragmor Sanitarium, Colorado Springs, Colo.; one of the best-known authorities on tuberculosis, died from that disease, at Asheville, N. C., November 19.

Edward Tiffin Comegys, M.D. Miami Medical College, Cincinnati, 1872; who was commissioned assistant surgeon in the medical department of the Army, June 26, 1875; was made captain and assistant surgeon, June 26, 1880; major and surgeon, Oct. 26, 1893; lieutenant-colonel and deputy surgeon-general, Sept. 7, 1892, and was retired at his own request after more than 30 years of active service, July 1, 1905, died at the Angelus Hospital, Los Angeles, Cal., September 1, aged 56. He was given a military funeral at the Presidio of San Francisco.

James H. Buckner, M.D. Medical College of Ohio, Cincinnati, 1861; a member of the American Medical Association and Ohio State Medical Society, and in 1878 president of the Cincinnati Academy of Medicine; oculist and aurist to St. Mary's Hospital, Cincinnati, from 1870 to 1890, and to the Sisters of the Good Shepherd and School Brothers of St. Francis for more than 40 years; a specialist in diseases of the eye and ear in Cincinnati, died at his office in that city, November 15, after an illness of only two hours, aged 70.

Lorenzo M. Greene, M.D. University of Vermont, Medical Department, Burlington, 1876; for several years state supervisor of the insane; for 12 years a member of the school committee; in 1894 a member of the legislature and in 1902 state senator; a member of the American Medical Association and one of the most prominent practitioners of Windsor County, Vermont, died at his home in Bethel, November 12, from peritonitis, for which operation was performed without avail, after an illness of six days, aged 54.

James William Claiborne, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1848; who went to California in 1849 during the gold excitement; served throughout the Civil War as surgeon of the Twelfth Virginia Infantry and Mahone's Brigade, C.S.A., and thereafter practiced in Petersburg, Va.; said to have been the oldest practitioner of that city; a member of the Medical Faculty of Petersburg, died suddenly at his home, November 22, from acute gastritis, aged 81.

David Gilbert Hathaway, M.D. New York University, New York City, 1887; some-time interne in Bellevue Hospital, New York; health officer of Wauwautosa, Wis., and for several terms county physician of Milwaukee County; superintendent of the Northern Hospital for the Insane, Oshkosh, during Governor Peck's administration, died at Trinity Hospital, Milwaukee, November 14, from tuberculosis, after an illness of one year, aged 41.

Stephen D. Thruston, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1864; lecturer on practical life insurance in the Medical Department of Southwestern University, Dallas, Texas; a member of the Dallas Medical and Surgical Association, died at his home in Dallas, November 15. At a special meeting of the association, November 16, suitable resolutions were adopted.

Robert Bruce Tabb, M.D. Department of Medicine of the University of Pensylvania, Philadelphia, 1855; a surgeon in the Confederate service throughout the Civil War; a practitioner of Norfolk County, Indian Creek, Va.; a member of the house of delegates in 1883, died at the home of his son-in-law in Falls Church, Va., November 12, aged 73.

A. C. Keating, M.D. California Medical College, Oakland, 1884; a veteran of the Civil War; for some time president of the board of health of San Bernardino; coroner of San Bernardino County and local surgeon for the Southern Pacific System, died at the Soldiers' Home, Los Angeles, recently, and was buried November 9 with military honors.

William Marshall Barrett, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1846; one of the oldest medical practitioners of Massachusetts; surgeon of the Fifty-third Massachusetts Volunteer Infantry for three years during the Civil War, died at his home in Westboro, November 14, from cerebral hemorrhage, aged 84.

John A. Laros, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1862; a member of the first town council of Coopersburg, Pa.; formerly a member of the school board and of the board of health, died at his home in that city, November 15, from cerebral hemorrhage, after an illness of one hour, aged 68.

Robert H. Aldrich, M.D. Tulane University of Louisiana, Medical Department, New Orleans, 1894; of Baton Rouge, La.; a member of the American Medical Association, and one of the leading practitioners of Louisiana, was shot and instantly kiled by Congressman-elect George K. Favrot, in Baton Rouge, November 7.

Joseph C. Hance, M.D. College of Physicians and Surgeons in the City of New York, 1904; after graduation assistant surgeon at Roosevelt Hospital, New York City, died at the home of his parents in New Philadelphia, Ohio, from tuberculosis, November 3, after an illness of five months, aged 25.

Thomas W. Leeper, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1874; deputy postmaster of Oakland, Neb., and late editor of the Oakland *Independent;* the first physician permanently to locate in the Logan Valley, died at his home in Oakland, after a long illness, October 22.

Joseph P. O'Dwyer, M.D. College of Physicians and Surgeons in the City of New York, 1890; a member of the Michigan State and Wayne County medical societies, died at his home in Detroit, November 13, from tuberculosis, after an illness of one year, aged 37.

Ruth E. Swift Marvin, M.D. Hahnemann Medical College and Hospital, Chicago, 1892; a member of the Sioux City Homeopathic Medical Society, died at her home in Sioux City, Iowa, from heart disease, November 11, after an illness of several months, aged 37.

Otis Allen, M.D. Buffalo University Medical Department, 1880; a member of the Medical Society of New York, and the Allegany County Medical Society, died at his home in Cuba, N. Y., from Bright's disease, November 8, after an illness of several months, aged 70.

Ferdinand Beach, M.D. Medical Institution of Yale College, New Haven, 1864; for 40 years a practitioner of New York City; surgeon throughout the Civil War; a member of the New York County Medical Society, died at Santa Barbara, Cal., November 15, aged 69.

Franz George J. Specht, M.D. St. Louis Medical College, 1858; formerly dispensary physician of St. Louis; manager of *Anzieger des Westens,* died at his home in St. Louis, from Bright's disease, November 13, aged 75, after an illness of a year.

George B. Moore, M.D. Hamline University College of Medicine, Minneapolis, 1901; police surgeon af St. Paul, for three years, died at St. Joseph's Hospital in that city, November 14, from pneumonia, after an illness of three days, aged 35.

Thomas W. Greenley, M.D. University of Maryland School of Medicine, Baltimore, 1888; formerly a practitioner of Baltimore, died at Saranac Lake, N. Y., November 16, from tuberculosis, after an illness of ten years, aged 41.

Benjamin H. Fisher, M.D. Medical College of Ohio, Cincinnati, 1864; surgeon of the One Hundred and Fifty-seventh Ohio Volunteer Infantry in the Civil War, died at his home in Steubenville, Ohio, November 9, aged 68.

Edgar S. McDow, M.D. Memphis Hospital Medical College, 1893; of Lancaster, S. C., who was shot in a duel with his brother-in-law a few days before, died in Rockhill Hospital, Columbia, S. C., November 14, aged 35.

Edwin E. Beeman, M.D. Cleveland Medical College, Medical Department of Western Reserve College, 1875, died at his home in Cleveland, November 6, from cerebral hemorrhage, after an illness of four weeks, aged 67.

John James Hill, M.D. Bellevue Hospital Medical College, New York City, 1877; died at his home in Washington, Ga., November 12, after an illness of three weeks, from malarial fever, aged 53.

Craig Cameron, M.D. New York University, New York City, 1886; of Olneyville, Providence, R. I., died at the home of his brother in Olneyville, November 9, from nephritis, after a prolonged illness.

Joseph M. McLean, M.D. Medical Department of the University of Tennessee, Nashville, 1885; died at his home in Midland, Tenn., November 12, after a short illness, aged about 80.

Frank Magel, M.D. Physio-Medical College of Indiana, Indianapolis, 1896; died at his home in Indianapolis, November 14, from intestinal hemorrhage, after an illness of five weeks, aged 42.

Donald A. Fraser, M.D. Harvard University Medical School, Boston, 1891; died at his home in East Boston, Mass., November 12, from pneumonia, after an illness of one week, aged 50.

John P. Ermentraut, M.D. New York Homeopathic Medical College and Hospital, New York City, 1873; died at his home in Brooklyn, November 14, from meningitis, aged 68.

John R. Mansfield, M.D., Harvard University Medical School, Boston, 1850; for many years a resident of Wakefield, Mass., died in Chelmsford, Mass., November 11.

James L. McSherley, M.D. Ohio Medical College, Cincinnati, 1883; died at his home in Sulphur Springs, Ind., November 14, from nephritis, after a long illness, aged 48.

John Maurer (Years of Practice, Indiana), died at the home of his son in South Bend, Ind., November 8, from senile debility, after an illness of two years, aged 74.

Ernest J. Miller, M.D. College of Physicians and Surgeons of Chicago, 1888; died at his home in Sycamore, Ill., November 19, from embolism, aged 52.

Michael Grandfield, M.D. New York University, New York City, 1887; died at his home in Pawtucket, R. I., November 14, after a brief illness, aged 49.

Ormond E. Burdick, M.D. New York University, New York City, 1892; of Little Genesee, N. Y., died November 15, after a surgical operation, aged 58.

Eugene G. Watson, M.D. Memphis Hospital Medical College, 1893; died at his home in New Waverly, Texas, November 12, after a long illness.

J. A. Morris, M.D. Rush Medical College, Chicago, 1870; died at his home in Kent, Ohio, November 13, from locomotor ataxia, aged 58.

Arthur Ramser, M.D. Jenner Medical College, Chicago, 1903; died at his home in Chicago, November 15, from heart disease.

E. F. Everest, M.D. Medical College of Ohio, Cincinnati, 1872; died at his home in St. Mary's, Ohio, November 12.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

THE SALIVA OF HYDROPHOBIC PATIENTS.

——, MASS., Nov. 8, 1906.

To the Editor:—What is the probable influence of a bite inflicted by a person having hydrophobia, and are such bites considered infectious or known to have been so? I can find nothing in any of the leading text-books of medicine referring to this except in Hare, who claims the disease is communicable in this manner. I had always supposed it to be so, but recently had my belief disputed. I am told that Pasteur Institute physicians claim that such bites are harmless. Kindly quote authority in your answer and greatly oblige. H. H. W.

ANSWER.—There are very scanty references to this subject in the literature. The saliva of hydrophobic patients was proved to be capable of conveying the disease to dogs in 1823 by Magendie, and to this fact is said by G. Fleming to have been confirmed by Eckel and Renault (G. Fleming, "Rabies and Hydrophobia," 1872, p. 140). According to Dolan: "It may be transferred from man to animals, but the evidence is incomplete of the communication of the disease from man to man." The "Twentieth Century Practice of Medicine" states that Pasteur made his first infection of a rabbit with the saliva of a hydrophobic child. The infectious character of the saliva of man as well as of animals affected with this disease should certainly be assumed until it is clearly proved that the opposite is true.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Nov. 24, 1906.

Brechemin, Louis, dep. surg. gen., granted one month and twelve days' leave of absence on surgeon's certificate of disability.

Jean, George W., asst.-surgeon, retired from active service with rank of captain, November 7, on account of disability incident to the service.

Webb, W. D., asst.-surgeon, relieved from further duty at Fort Huachuca, Ariz., and from further duty with the Army of Cuban Pacification, and will proceed from this city to Fort Snelling, Minn., and report for duty.

Palmer, Fred W., asst.-surgeon, advanced to the rank of captain from November 14.

Little, Wm. L., asst.-surgeon, granted twenty days' leave of absence, effective on arrival in the United States.

Carpenter, Alden, dental surg., left Vancouver Barracks, Wash., for Havana, Cuba.

Wheate, J. Marchal, contract surgeon, ordered from Boise, Idaho, to Fort Yellowstone, Wyo., for duty.

Branch, Frederick D., contract surgeon, left Fort Wood, N. Y., on leave of absence for two months, twenty-five days.

Merrick, John N., contract surgeon, returned to Fort Missoula, Mont., from leave of absence.

Wells, Francis M., contract surgeon, returned to Fort Robinson, Neb., from duty in the field.

Mills, Frederick H., contract surgeon, granted leave of absence for ten days.

Brown, Polk D., contract surgeon, relieved from duty in the Philippines Division, and ordered to the United States for station.

Mount, James R., contract surgeon, relieved from duty in the Philippines Division, and ordered to the United States for station.

Wing, Franklin F., dental surgeon, granted leave of absence for one month.

Whinery, Jean C., dental surgeon, left Fort Stevens, Oregon, and arrived at Fort Lawton, Wash., for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Nov. 24, 1906:

Rennie, W. H., P. A. surgeon, detached duty at Naval Hospital, Pensacola, and to duty on the U. S. S. Wasp.

Mink, O. J., asst.-surgeon, when discharged from treatment at the Naval Hospital, Yokohama, Japan, to report to the Surgeon General, Navy Department.

Ryder, C. E., Jennens, B. F., and Shaw Harry, asst.-surgeons, and Plummer, R. W., P. A. surgeon, to report to the president, Naval Medical Examining Board, Naval Medical School, Washington, on Dec. 1, 1906, for examination preliminary to promotion, and when discharged by the board to resume duty at present stations.

Stitt, E. R., surgeon, to report on Dec. 1, 1906, to the president of the Naval Medical Examining Board, Naval Medical School, for duty as a member of that board.

Pugh, W. S., Jr., P. A. surgeon, detached from duty on the U. S. S. *Lancaster*, and to duty on the U. S. S. S. *Tacoma*.

Snyder, J. J., P. A. surgeon, detached from duty on the U. S. S. *Tacoma*, and to duty at the Naval Hospital, Philadelphia.

Langhorne, C. D., surgeon, to duty at the U. S. Naval Medical School Hospital, Washington, on November 30.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended November 21, 1906:

Pettus, W. J., asst.-surgeon general, directed to proceed to Chicago, for special temporary duty, on completion of which to rejoin his station at Washington, D. C.

Carrington, P. M., surgeon, leave of absence granted for 15 days from October 29, amended to read for 10 days only.

Grubbs, S. B., P. A. surgeon, granted leave of absence for 5 days from November 28.

von Esdorf, R. H., P. A. surgeon, granted leave of absence for 14 days from November 21.

Amesse, J. W., P. A. Surgeon, orders to report at Washington, D. C., temporarily revoked. Ordered to report to medical officer in command at Ellis Island for duty.

McLaughlin, A. J., P. A. surgeon, directed to proceed to Trieste and Fiume, Austria, for special temporary duty, on completion of which to rejoin station at Naples, Italy.

McCoy, G. W., P. A. surgeon, relieved from duty at Fort Stanton, N. M., on expiration of leave of absence, and directed to proceed to Washington, D. C., for temporary assignment in the Hygienic Laboratory.

Roberts, Norman, assistant surgeon, granted leave of absence for 6 days from November 19, under paragraph 191 of the Regulations.

de Valin, H., asst.-surgeon, granted leave of absence for 3 days from October 15, under paragraph 191 of the Regulations.

Guthe, M. C., asst.-surgeon, relieved from duty at Havana, Cuba, and directed to proceed to Ellis Island, N. Y., reporting to medical officer in command for duty, November 17.

Stiles, Ch. W., chief Division of Zoology, Hygienic Laboratory, detailed to represent the service at the meeting of the Association for the Advancement of Science, in New York, Dec. 28-29.

Duke, B. F., acting asst.-surgeon, granted leave of absence for 25 days, from November 20.

Foster, S. B., acting asst.-surgeon, granted leave of absence for 13 days from November 17.

Gribble, B. G., acting asst.-surgeon, granted leave of absence for 3 days from November 16, under paragraph 210 of the Regulations.

Hallet, E. B., acting asst.-surgeon, granted leave of absence for 3 days from November 26.

McConnell, M. F., acting asst.-surgeon, relieved from temporary duty at Banes, Cuba, and directed to rejoin his station in Havana.

Onuf, B., acting asst.-surgeon, granted leave of absence for 20 days from November 22.

Raiford, M. V., acting asst.-surgeon, granted extension of leave of absence for 7 days from November 21.

Thomas, E. M., pharmacist, granted leave of absence for 4 days from November 9, under paragraph 210 of the Regulations.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Nov. 23, 1906:

SMALLPOX—UNITED STATES.

Illinois: Galesburg, Nov. 3-10, 15 cases.
Indiana: South Bend, Nov. 3-10, 9 cases.
Louisiana: New Orleans, Nov. 3-10, 5 cases.
Montana: In 3 counties, Oct. 1-31, 6 cases.
Wisconsin: In 26 counties, Sept. 1-30, 232 cases.

SMALLPOX—FOREIGN.

Argentina: Buenos Ayres, Oct. 6, 18 cases.
Austria: Galicia, Sept. 16-22, 2 cases.
Chile: Antofagasta, Oct. 6-20, 13 cases; Coquimbo, 64 cases, 2 deaths; Iquique, present; Talcahuana, present.
Colombia: Cartagena, Sept. 30-Oct. 20, present.
India: Calcutta, Oct. 6-13, 1 death.
Italy: General, Oct. 22-29, 2 cases.

YELLOW FEVER.

Cuba: Cruces, Nov. 15, 2 cases; Havana, Nov. 15-20, 7 cases; Santa Clara, Nov. 17, 1 case.

CHOLERA—INSULAR.

Philippine Islands: Manila, Sept. 15-29, 30 cases, 20 deaths; Provinces, 450 cases, 362 deaths.

CHOLERA—FOREIGN.

India: Calcutta, Oct. 6-13, 28 deaths; Madras, Oct. 13-19, 12 deaths.

PLAGUE.

Egypt: Alexandria, Oct. 12-24, 4 cases, 3 deaths; Garbiah Province, Oct. 24, 1 case; Minieh, Oct. 14, 1 case; Port Said, Oct. 21-24, 2 cases, 1 death; Suez, Oct. 15-25, 6 cases, 4 deaths.
India: Calcutta, Oct. 6-13, 11 deaths.
Japan: Osaka, Sept. 17-Oct. 6, 21 cases, 14 deaths.
Mauritius: Aug. 30-Sept. 14, 24 cases, 20 deaths.
Peru: Lambyeque, Oct. 6-20, 2 cases; Lima, 4 cases; Paita, 1 case; Salaverry, 1 case; Trujillo, 7 cases.
Turkey: Adalia, Sept. 26-29, 3 cases, 1 death.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

New Mexico State Board of Health, Santa Fe, December 3. Secretary, Dr. B. D. Black, Las Vegas.

Pennsylvania State Medical Examining Board, Industrial Hall, Philadelphia, December 4-7. Secretary, Dr. Joseph E. Willetts, Pittsburg.

Wyoming Board of Medical Examiners, State Capitol, Cheyenne, December 5. Secretary, Dr. S. B. Miller, Laramie.

Delaware State Medical Society Examining Board, Dover, December 6, and by the Homeopathic Board at Wilmington on same date. Secretary of the Medical Council, Dr. P. W. Tomlinson, Wilmington.

Ohio State Board of Medical Registration and Examination, Columbus, December 11-13. Secretary, Dr. Geo. H. Matson, Columbus.

Iowa State Board of Medical Examiners, Office of State Board of Health, Des Moines, December 11-13. Secretary, Dr. J. F. Kennedy, Des Moines.

Virginia Medical Examining Board, Richmond, December 11-14. Secretary, Dr. R. S. Martin, Stuart.

Maryland Board of Medical Examiners, 847 N. Eutaw St., Baltimore, December 12. Secretary, Dr. J. McP. Scott, Hagerstown.

California State Board of Medical Examiners, San Francisco, December 18. Secretary, Dr. Chas. L. Tisdale, Alameda.

Oklahoma Board of Medical Examiners, Guthrie, December 26. Secretary, Dr. J. W. Baker, Enid.

Virginia June Report.—Dr. R. S. Martin, secretary of the Medical Examining Board of Virginia, reports the written and oral examination, held at Richmond, June 19-22, 1906. The number of subjects examined in was 19; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 118, of whom 93 passed and 25 failed, including one osteopath. Ten reciprocal licenses were granted. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Howard University	(1902)*, (1904)	75
George Washington University	(1906) 76, 79,	79
Hahnemann Med. Coll., Chicago	(1903) 74†,	75
Kentucky U.	(1904)*	80
University of Maryland	(1905) 76; (1906) 76,	81.5
College of P. and S., Baltimore	(1905)	83
Johns Hopkins Med. School	(1905) 82,	84
Baltimore Med. Coll.	(1895)*, (1902)	84
Saginaw Valley Med. Coll.††	(1903)	77
Marion-Sims Med. Coll.	(1888)*	
Beaumont Hosp. Med. Coll.	(1887)*	
Bellevue Hosp. Med. Coll.	(1886)*	
College of P. and S., New York	(1904)*	
Leonard Med. Coll.	(1904) 74†; (1906) 75, 78, 81, 81, 81, 81	
Medical College of Ohio	(1900)*	
Jefferson Med. Coll.	(1906)	79
University of Pennsylvania	(1897),* (1905) 87; (1906)	87
University of Tennessee	(1900)*	
University of Nashville	(1906)	87
Meharry Med. Coll.	(1905)	75

Medical College of Virginia (1905) 74†, 78, 82; (1906) the grades of 74† and 75 were reached by two each, 76 by one, 77 by five, 79 by two, 80 by four, 81 by five, 82 by three and 84 and 85 by one each.

University of Virginia (2, 1881),* (1898) 81; (1899)* (1903) 81; (1904) 81; (1906) 76, 81, 81, 82, 84.

University Coll. of Medicine, Richmond, (1901),* (1906) the grade of 75 was reached by three, 76 and 77 by one each, 79 by two, 80 and 81 by one each, 82 by three and 85 and 88 by one each.

Queen's University, Ontario (1906) 79

FAILED.

Howard University	(1905)	72
National University, Washington**	(1901)	73
Kentucky University	(1904)	61

Hospital Coll. of Med., Louisville ..... (1905) 64
Southwestern Homeo. Med. Coll. ..... (1906) 48
Baltimore Med. Coll. ..... (1899) 62; (1905) 72; (1906) 69
Maryland Med. Coll. ..... (1904) 66
Medico-Chirurgical Dept. of Christ Institution, Baltimore, (1904) 72.
Leonard Med. Coll., (1904) 73, 73; (1905) 63, 73; (1906) 63, 74, 70, 70, —‡.
Meharry Med. Coll. ..... (1905) 68
University of the South ..... (1903)* —
University Coll. of Med., Richmond ..... (1906) 72
Medical Coll. of Virginia ..... (1906) 72, 75

LICENSED THROUGH RECIPROCITY.

College.	Year Grad.	Reciprocity with.
Columbian University, Washington**	(1900)	Maryland
Tufts Coll. Med. School	(1898)	Illinois
University of Maryland	(1900), (1901), (1905)	Maryland
Maryland Med. Coll.	(1901)	Maryland.
Maryland Med. Coll.	(1905)	Georgia
Woman's Med. Coll., Baltimore	(1901), (1905)	Maryland
College of P. and S., Baltimore	(1903)	Maryland

* Physicians who, because of 5 or more years of practice, or for other reasons, were given oral examinations.
† Applicants receiving 74+ were referred to the executive committee of the board, who directed that they be passed.
‡ No percentage given.
** Now the George Washington University, Washington, D. C.
†† Merged with Michigan College of Medicine and Surgery in 1904.

Arkansas July Report.—Dr. J. P. Runyan, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, July 10, 1906. The number of subjects examined in was 7; total number of questions asked, 59; percentage required to pass, 75. The total number of candidates examined was 54 ,of whom 35 passed, including 17 non-graduates, and 19 failed, including 13 non-graduates. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
University of Arkansas	(1906)	76
Harvey Med. Coll.	(1905)	85
University of Louisville	(1905)	90
Louisville Med. Coll.	(1889) 75	(1906) 79
Hospital Coll. of Med.	(1891)	75
University of Kentucky	(1898)	75
Tulane University	(1904) 78;	(1906) 79
St. Louis University (Marion Sims-Beaumont Med. Coll.)		(1906) 76, 81, 84, 86.
College of P. & S., St. Louis	(1906)	92
University of Nashville	(1878) 75;	(1905) 93
Vanderbilt University	(1884)	75
Bell Med. Coll., Dallas*	(1904)	89

FAILED.

Meharry Med. Coll. ..... (1904) 48; (1906) 50, 61, 65, 71
Medical College of Indiana ..... (1905) 69
* This became the College of Physicians and Surgeons, Dallas, in 1905.

California August Report.—Dr. Charles L. Tisdale, secretary of the California Board of Medical Examiners, reports the examination held at San Francisco, Aug. 25, 1906. The total number of candidates examined was 132, of whom 101 passed and 31 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Number Exam'd.
Hirnh gham Medical College	(1903)	1
Cooper Med. Coll.	(1, 1905) (21, 1906)	22
Oakland Coll. of Med. & Surg.	(1906)	3
California Med. Coll.	(1906)	1
College of P. & S., San Francisco	(2, 1905) (6, 1906)	8
University of Southern California	(1906)	16
College of P. & S., Los Angeles	(3, 1905) (1, 1906)	4
University of California	(1906)	8
Hahnemann Med. Coll., San Francisco	(1906)	4
College of P. & S., Chicago	(1895) (1898) (2, 1902)	4
Northwestern Univ. Med. School	(1900) (1903) (1905) (1906)	4
American Med. Miss. Coll.	(1900)	2
Hahnemann Med. Coll., Chicago	(1905)	1
Rush Medical College	(1902) (1905)	2
American College of Med. & Surg.	(1904)	1
University of Iowa	(1902)	1
Tulane University	(1895)	1
Johns Hopkins University Med. School	(1900)	1
University of Michigan	(1906)	1
Missouri Med. Coll.	(1896)	1
Washington University	(1905)	1
Bellevue Hosp. Med. Coll.	(1880) (1889)	2
New York University Med. School	(1882) (1893)	2
Pulte Med. College	(1900)	1
Miami Med. College	(1904)	1
Medical College of Ohio	(1906)	1
Medico-Chirurgical Coll., Philadelphia	(1905)	1
University of Pennsylvania	(1899) (1902)	2
Hahnemann Med. Coll., Philadelphia	(1900) (1905)	2
Jefferson Med. Coll.	(1902)	1
University of Vermont	(1905)	1

FAILED.

California Med. Coll.	(1905) (2, 1906) 3
College of P. & S., Los Angeles	(1906) 1
College of P. & S., San Francisco	(1904) (1906) 2
Cooper Med. Coll.	(1903) (1906) 2
University of California	(1906) 1
University of Southern California	(1906) 6
Denver and Gross Coll. of Med.	(1905) 1
Howard University	(1899) 1
Bennett Med. Coll., Eel., Chicago	(1906) 1
Chicago Homeopathic Med. Coll.	(1896) 1
Hering Med. Coll.	(1903) 1
Northwestern Univ. Woman's Med. School	(1881) 1
College of P. & S., Iowa*	(1885) 1
American Med. Coll., St. Louis	(1905) 1
Beaumont Hosp. Med. Coll.	(1895) 1
Missouri Med. Coll.	(1887) 1
University of Missouri	(1897) 1
Omaha Med. Coll.	(1892) 1
Columbus Med. Coll.†	(1891) 1
Starling Med. Coll.	(1888) 1
Jefferson Med. Coll.	(1870) 1
Medico-Chirurgical College, Philadelphia	(1904) 1
University of Genoa, Italy	(1905) 1

* Became the Medical Department of Drake University in 1900.
† In 1902 merged with Starling Medical College.

Wyoming September Report.—Dr. S. B. Miller, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, Sept. 5-7, 1906. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Drake University	(1897)	75.2
Missouri Med. Coll.	(1899)	82
Creighton Med. Coll.	(1905)	75.6
University & Bellevue Hosp. Med. Coll.	(1906)	80.7
Medico-Chirurgical College, Philadelphia	(1906)	77.1
University of Pennsylvania	(1900)	82.6

North Dakota October Report.—Dr. H. M. Wheeler, secretary of the State Board of Medical Examiners of North Dakota, reports the written examination held at Grand Forks, Oct. 2-4, 1906. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 13, all of whom passed. Eleven reciprocal licenses were granted at this examination. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Northwestern University	(1902)	77
Illinois Med. Coll.	(1904)	78
Tulane University	(1898)	85
Hamline University	(1903)	78, 82
University of Michigan	(1889)	80
Washington University, St. Louis	(1906)	78
University of Nebraska	(1903)	80
Ohio Medical University	(1902)	92
Milwaukee Med. Coll.	(1903)	77
University of Toronto	(1905)	92
McGill University, Montreal	(1904)	80
University of Christiania, Norway	(1902)	76

REGISTERED THROUGH RECIPROCITY.

College.	Year Grad.	Reciprocity with.
American Coll. of Med. and Surg., Chicago	(1905)	Illinois.
Bennett Med. Coll.	(2, 1906)	Illinois.
Northwestern University	(1906)	Illinois.
College of P. and S., Chicago	(1906)	Illinois.
Keokuk Med. Coll., Coll. of P. and S.	(1905) (3, 1906)	Iowa.
University of Iowa	(1906)	Iowa.
Wisconsin College of P. and S.	(1906)	Wisconsin.

Changes in the Arkansas Board.—Dr. J. P. Runyan has resigned the secretaryship of the Board of Medical Examiners of Arkansas, to become dean of the new College of Physicians and Surgeons of Little Rock. Dr. F. T. Murphy, Brinkley, has been elected to succeed him. The law of Arkansas prohibits any member of the Board of Medical Examiners from being connected with any medical school. Dr. L. E. Love, Dardanelle, was appointed to fill the vacancy thus created in the board.

Medico-Chirurgical Record in 1905.—Additional data received from the Medical Council of Pennsylvania and correction of some errors in THE JOURNAL, Aug. 25, 1906, show that the percentages of failures by graduates of the Medico-Chirurgical College of Philadelphia before state examining boards during the year 1905 are reduced as follows: Graduates of all years from 19.5 to 16.9 per cent.; graduates of 1905 from 15.7 to 13.7, and graduates of 1900 to 1905 inclusive from 18.2 to 15.4 per cent.

University of Utah Advances Requirements.—The Department of Medicine of the University of Utah has voted to require for admission to the medical course, in addition to a four-year high school education, a year in the university proper devoted to physics, chemistry, biology and languages. This requirement will begin with the college year 1908-9.

Reciprocity in Texas.—Dr. T. T. Jackson, secretary of the Board of Medical Examiners, reports that Texas now recognizes licenses from the following states: Minnesota, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, Vermont and Virginia.

Society Proceedings

COMING MEETINGS.

American Public Health Assn., Mexico City, Dec. 3-7.
Southern Surg. and Gyn. Assn., Baltimore, Dec. 11-13.

PHILADELPHIA SOCIETY FOR THE STUDY AND PREVENTION OF SOCIAL DISEASE.

Regular Meeting, held Oct. 18, 1906.

The President, Hon. Abraham M. Beitler, in the Chair.

Syphilis and Gonorrhea in Internal Medicine.

Dr. William E. Hughes and Dr. Robert N. Willson, Jr., stated the probability that if every case of syphilis were isolated and treated by judicious medication and overfeeding in the fresh air, after the manner of tuberculosis, the disease could be stamped out within a few generations. Prevention, however, seems to offer the only satisfactory measure in the elimination of the disease. Every case of tabes should be studied for syphilis. Syphilis predisposes to tuberculosis.

For gonorrhea, they stated, there should be a new teaching to the effect that it is not merely a local infection of the urethra, but a systemic infection of the blood and lymph glands. The only method of procedure which will avail is that the medical profession shall give to the laity the full facts in the case. Then on their coöperation will depend their own salvation.

Surgery of Syphilis and Gonorrhea.

Dr. Ernest Laplace said that the surgical aspects of syphilis arise invariably from a case where the initial sore has been overlooked, and where the disease has progressed in a typical way to its third stage without the knowledge of the patient; or else the patient has been insufficiently treated, and being discharged before complete destruction of the poison within the body, he becomes a prey to renewed deep-seated manifestations of the disease from a pullulation of what poison was left in the body when treatment was suspended. Surgical syphilis is also a frequent form in hereditary cases. Dr. Laplace believes that syphilis can be cured, but that it requires a three years' intelligent treatment under the care of a competent physician.

Gonorrhea, Dr. Laplace said, is serious, perhaps more so than syphilis, because while syphilis can be checked by proper treatment, there is no scientific remedy known to cure gonorrhea locally, or to prevent the general infection of the body. Starting from the stricture which may follow, and which may lead to the retention of urine, the gonococcus may infect the bladder and the kidneys. It may also infect the joints and the serous membranes, including the pericardium, the pleura and the brain. He laid emphasis on the importance of impressing on the people the full dangers of the infection; and the wisdom of intelligent, continued treatment that the poison may be speedily checked while in the urethra, preventing its dissemination throughout the system.

Prevention and Treatment of Venereal Diseases.

Dr. Herman Knapp, New York, said that as soon as the newborn child has filled its lungs with a cry announcing its individuality as an independent being, its eyes, in a certain number of cases, are threatened with blindness. The percentage of blind children in institutions has been reduced materially by the adoption of Credé's method. That cases of infective conjunctivitis are not found in maternity hospitals is suggestive of the advisability of a law to compel obstetricians and midwives to disinfect all babies' eyes as soon as they are born.

In Dr. Knapp's experience the greatest number of cases of tabes are due to syphilis. The percentage noted by him some years ago was over 75. The first symptoms occur many years after the infection.

DISCUSSION.

Hon. Abraham M. Beitler said that the laity have the right to ask of the medical men that the public be guarded against the spread of venereal infection. He suggested that the department of health be asked to have printed in various languages a pamphlet teaching the infected person what the infection means to himself, and calling his attention to his duty to others. Further, that the hospital trustees be asked to coöperate with the department of health by making it a rule of the out-patient department that such pamphlets should be placed in the hands of every patient and the information be made clear to them, and that the latest health act be so amended that the department of health shall be given the power to place certain cases of syphilis under appropriate care. Mr. Beitler believes that public hospitals might equip a ward for such diseases, and that there should be in connection with the municipal hospital a department for the treatment of venereal disease. For emergency cases the municipal hospital would offer immediate custodial care and a place of seclusion not obtainable in other hospitals.

Dr. B. Alexander Randall was in accord with the suggestions of Judge Beitler and called attention to the difficulties in the individual case of giving so much as a pamphlet to some persons consulting the physician.

Dr. Jay F. Schamberg referred to a certain degree of apathy among physicians concerning the suppressing of venereal disease. He did not attribute this to lack of desire to accomplish the purpose, but to the feeling that the effort seemed to them futile. It has been his practice for four years to issue in a department of one of the hospitals printed instructions to patients suffering from syphilis. Physicians and other members of the community should do what is possible toward limiting the spread of the disease. While the problem is a difficult one, to say that nothing can be done he regards as mere sophistry.

On motion it was resolved that Dr. W. M. L. Coplin, director of the department of health, be asked to formulate rules in accordance with his previously expressed views on limiting the spread of syphilis and gonorrhea, to be presented at the next meeting of the society.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirty-second Annual Meeting, held at Hot Springs, Ark., Nov. 6-8, 1906.

(*Continued from page 1761.*)

Danger of Dust as a Cause of Tuberculosis.

This paper by Dr. George Homan, St. Louis, Mo., is practically the same as that which appeared in the British Medical Journal, Sept. 15. See abstract in The Journal, Oct. 13, 1906, page 1230.

Retroversio-Flexions in Their Relation to Pregnancy.

Dr. Channing W. Barrett, Chicago, condemned the practice of producing abortion in the interests of the child in beginning incarceration, and likewise the method of puncturing through the posterior cul-de-sac in the interests of the mother, saying that the puncture may be so located as to be equivalent to a rupture of the uterus into the peritoneal cavity. Ventro-suspensio-fixation is condemned. To operate on these cases when most advantageous to the mother and child, the operation must offer the following safeguards and advantages: 1. It must be safe for the mother. 2. It must decrease the fetal mortality. 3. It must insure or promise a permanent cure for the retrodisplacement. If these condition are secured, instead of pregnancy being a bar to an operation, it may at times furnish an urgent argument for an operation.

The writer drew the following conclusions: 1. Retroversio-flexion is a pathologic condition worthy of appropriate treatment, operative or non-operative. 2. Pregnancy may be the means of cure of retroversio-flexion, but may seriously complicate the condition. 3. The retrodisplaced pregnant uterus should be replaced as soon as possible, and, if necessary, held in position by a pessary. 4. A retrodisplacement during the early weeks of pregnancy that can not immediately be replaced should be supervised and efforts made to assist its return to a normal position as growth advances. 5. An irreducible retrodisplaced pregnant uterus that shows beginning

signs of intolerance or incarceration should have a radical operation for the retrodisplacement rather than be emptied or punctured. 6. In cases of inevitable abortion, the uterus should be emptied and the retrodisplacement corrected, if possible, the radical operation following later, if necessary. 7. Cases of marked incarceration should have the benefit of abdominal section unless abortion is inevitable. 8. Cases operated on should have the radical operation for the retrodisplacement if the conditions are such as to warrant its performance. 9. Should a retrodisplacement correct itself, or be corrected during pregnancy without operation, it should be carefully supervised after confinement with a view of permanently correcting the malposition.

Toxemia of Pregnancy.

DR. D. M. HALL, Memphis, reported a case of toxemia of pregnancy in which there were several unusual features. There was a clear history of an attack of uremia with the usual symptoms of edema of the lower extremities, suppression of urine, albuminuria, headache blindness and convulsions. Several years later a similar attack occurred during the eighth month of pregnancy, but whether this was uremic or eclamptic is questionable. Later an attack came on suddenly during the second month of pregnancy, which was accompanied by nausea, vomiting, headache, intense aching and restlessness, suppression of urine, albuminuria, diminution of urea and acute splenitis, but no edema, blindness or convulsions. During the eighth month of this pregnancy there was a sudden attack of nausea, attended by vomiting, intense aching and restlessness, pain and tenderness over the liver, lessened quantity of urea and urine, but no splenitis, headache, blindness, albuminuria or convulsions.

Blunt Dissection in Plastic Gynecologic Operations.

DR. T. J. WATKINS, Chicago, said the advantages of blunt dissection with scissors over the method heretofore in use are, first, that very much time is saved; second, raw surfaces are made which will give firmer union; third, there is less hemorrhage.

Pubiotomy and Its Relative Indications.

DR. E. B. MONTGOMERY, Quincy, Ill., said that he was obliged to do this operation in 1903 to enable him to deliver a child which was impacted in the pelvis in a mento-posterior position. Examination of the literature of the subject showed that no such procedure has ever been resorted to in this country for such a condition, nor has a lateral section of the pubis for any condition before been made on this side of the Atlantic. Satisfied with the outcome in this case, he began a thorough investigation of the literature of the operation of Gigli. The results in 134 cases collected by him from 35 different operators were uniformly favorable, in that there were no deaths in cases not previously infected, and all patients recovered with perfect union of the bone and with perfect gait.

An indication other than contracted pelvis for the performance of pubiotomy is the occurrence of an impacted mento-posterior face presentation in which a change of position can not be effected by the Volland or other procedures. In the case reported by the essayist a lateral section of the os pubis was done, and labor terminated by the delivery of a living child with forceps. The mother made an excellent recovery.

Operative Work for Hypertrophied Prostate.

DRS. BRANSFORD LEWIS and C. E. BURFORD, St. Louis, Mo., cited illustrative cases and exhibited a number of pathologic prostates. Their conclusions are: 1. Prostatic cases, if correctly estimated and judiciously treated, are now among the most satisfactory that seek the aid of the surgeon. 2. Diagnosis, both accurate and comprehensive, is essential to the attainment of such success and satisfaction. 3. Not all cases of enlarged prostate produce obstruction. 4. Not all cases, even though producing obstruction, require operation. 5. Not all cases that are producing obstruction and do require operation demand the same operation. 6. Not all cases of prostatic obstruction are produced by enlargement or outgrowth. Some are produced by definite contraction of the vesical neck, no hypertrophy being present. It is impossible to determine such conditions by palpating per rectum only. 7. The retrograde cystoscope is the most serviceable aid attainable in determining these questions in respective cases, hence its value in this work is inestimable. 8. Experience proves that neither advanced age, depression of health nor disease of the heart or kidneys debars the patient from the hope of operative relief. Operation reclaims many, even after they have suffered uremic attacks. 9. The longer required operative measures are postponed, the greater the likelihood of establishing spreading infections and renal involvement, conditions much less amenable to surgical relief than simple obstruction at the vesical neck. 10. Three weeks should be sufficient to demonstrate how much may be expected from palliative treatment, after which any operative treatment necessary should be carried out as soon as possible. Delays are dangerous.

(To be continued.)

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulæ and outlines of treatment are answered in these columns.]

Therapeutic Value of Ergot.

The best preparation of ergot, according to Osborne in a paper read before the American Therapeutic Society, is the purified extract which most correctly represents the combined activities of the drug. He states that many of the so-called purified preparations are useless for ergot activity. The fluid extract of the pharmacopeia is the only one of importance. The principal uses of ergot are as a sedative to the nervous system, as a circulatory tonic, as a smooth muscle stimulant and as a uterine contractor. Its principal physiologic actions are to contract the blood vessels, to slow the heart, to diminish the amount of blood in the central nervous system by contracting the blood vessels of the brain and spinal cord, to increase intestinal activity by stimulating the muscle fibers of the intestine, to strengthen the power of the bladder by stimulating its muscle and to contract a partially distended or dilated uterus.

If this preparation is given by the mouth, large doses, according to Osborne, will cause irritation of the gastrointestinal tract and will produce vomiting and purging, but if administered in physiologic doses the amount of urine is increased, by increasing the vasomotor tension, while in too large doses the amount of urine is diminished. Osborne states that it is not known how this drug is eliminated by the system.

Ergot is indicated, according to the author:

1. To contract blood vessels, to raise blood pressure, to stimulate the heart in conditions of shock, collapse and circulatory depression.

2. To contract the blood vessels of the brain and spinal cord, especially of the meninges when they are acutely inflamed or congested.

3. To promote activity from the bowels.

4. To contract the uterus in uterine hemorrhage.

5. To ameliorate attacks of asthma due to nervous irritability or reflexes.

6. To modify excessive secretion of the thyroid gland, which occurs in hysteria and Basedow's disease.

7. To quiet the nervous system and to aid in overcoming the morphin, opium, alcohol or other drug habits and to increase the potency for any dose of morphin that may be required for nerve pain.

8. To contract the blood vessels.

Osborne is of the opinion that there is no preparation, with the possible exception of suprarenal extract, that is so valuable. He recommends it, given hypodermically, in cardiac and circulatory failure occurring in typhoid fever, pneumonia, meningitis, operative shock or shock from injury. In cerebro-

spinal inflammations it is of great value, and he places it first among the therapeutic agents in the treatment of meningitis.

When ergot is administered less morphin is required to quiet the patient in any disease requiring morphin. In neurasthenic conditions or in general weakness accompanied by sleeplessness ergot will not infrequently serve as a good substitute for the powerful hypnotics. It is also of value in congestive headaches not accompanied by high blood tension.

In combating the tympanites after abdominal operations ergot corrects the trouble, as a rule, successfully.

In addition to the foregoing diseases in which it has been employed successfully, Osborne states that its use is warranted in the treatment of diabetes insipidus. He regards this trouble as a vasomotor disturbance, and thus acting on the blood vessels, ergot has reduced the amount of urine, relieved the headache and caused an increase in weight.

Mixtures.

Grünbaum, in his pharmacopeia for infants under three months of age and weighing 13 pounds or more, recommends the following combinations as of service, given in the form of mixtures:

Mistura acida cum strychnina:

℞. Sol. strychninæ hydrochlor. (1 p.c.)	m. 1/16	004
Acidi nitrici dil.	m. ss	03
Infusi calumbæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura acidi hydrochlorici:

℞. Acidi hydrochlorici dil.	m. ss	03
Syrupi simplicis	m. v	30
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura acidi nitro-hydrochlorici:

℞. Acidi nitro-hydrochlorici dil.		
Spiritus chloroformi, ää	m. ss	03
Tinct. aurantii corticis	m. i	06
Aquæ	f3i	4

M. Sig.: To be given at one dose.

Mistura acidi sulphurici cum opio:

℞. Acidi sulphurici arom.	gr. 1/3	02
Tincturæ opii	m. 1/6	01
Glycerini	m. x	65
Aquæ q. s. ad	f3i	4

Mistura etheria cum ammonia:

℞. Spiritus etheris		
Spiritus ammon. arom.		
Tincturæ aurantii corticis, ää	m. i	06
Aquæ camphoræ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura alba:

℞. Magnesii sulphatis	gr. ii	12
Magnesii carb.	gr. i	06
Aquæ menth. pip. q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura aloes cum ferro:

℞. Ferri tartratis	gr. 1/3	02
Decoct. aloes co.	m. v	30
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura aluminis:

℞. Alum	gr. i	06
Aquæ	f3i	4

M. Sig.: To be given at one dose.

Mistura ammonii bromidi:

℞. Ammonii chloridi	gr. i	06
Syrupi aurantii	m. v	30
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura ammonii citratis:

℞. Sol. ammonii citratis	m. iv	25
Aquæ	f3i	4

M. Sig.: To be given at one dose.

Mistura antiseptica:

℞. Hydrarg. chloridi mitis	gr. 1/10	65
Olei ricini		
Mucil. acaciæ, ää	m. v	30
Syrupi simplicis	m. x	65
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura ammon. et ipecacuanhæ:

℞. Ammon. carb.	gr. ¼	015
Vini ipecacuanhæ	m. i	06
Syrupi simplicis	m. x	65
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Misturæ ammonii acetatis:

℞. Sol. ammon. acetatis	m. v	30
Potassii citratis	gr. iii	20
Glycerini	m. v	30
Aquæ dest. q. s. ad	f3i	4

M. Sig.: One teaspoonful at a dose.

Mistura aperiens:

℞. Ext. jalapæ	gr. 1/16	004
Syrupi sennæ	m. iii	20
Spiritus chloroformi		
Tinct. zingiberis, ää	m. i	06
Syrupi simplicis	m. x	65
Aquæ cari q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura aromatici:

℞. Pulv. aromatici	gr. ii	12
Mucil. acaciæ	m. xx	1 30
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura aromatici cum rheo:

℞. Magnesii carb.	gr. i	06
Pulv. aromat.	gr. iii	20
Tinct. rhei	m. i	06
Aquæ menth. pip. q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura astringens:

℞. Ext. hematoxyli	gr. i	06
Vini ipecacuanhæ	m. i	06
Tinct. opii	m. ss	03
Misturæ cretæ q. s. ad	3i	4

M. Sig.: To be given at one dose.

Mistura belladonna composita:

℞. Tinct. belladonnæ	m. i	06
Sodii bicarbonatis	gr. i	06
Syrupi simplicis	m. xv	1
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura belladonna cum bromido:

℞. Potassii bromidi	gr. i	06
Tincturæ belladonnæ	m. i	06
Glycerini	m. x	65
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura bismuthi astringens:

℞. Bismuthi subnit.		
Pulv. cretæ, ää	gr. i	06
Glyceriti acidi tannici	m. i	06
Mucil. acaciæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura bismuthi composita:

℞. Bismuthi subnitratis	gr. ii	12
Sodium bicarb.		
Pulv. tragacanthæ co, ää	gr. i	06
Spiritus chloroformi	m. i	06
Aquæ cari q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura bismuthi cum catechu:

℞. Bismuthi subnit.		
Solutio potassæ		
Tinct. catechu, ää	m. i	06
Tinct. cardamomi	m. iv	25
Spiritus chloroformi	m. i	06
Mucil. tragacanthæ (q. s. for emulsion)		
Aquæ q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Mistura bismuthi et sodii:

℞. Bismuthi subcarb.		
Sodii bicarb., ää	gr. ii	12
Pulv. tragacanthæ co.	gr. i	06
Aquæ anethi q. s. ad	f3i	4

M. Sig.: To be given at one dose.

Medicolegal

Presumption of Sanity—Weakness of Expert Testimony.

The Supreme Court of California says, in re Dolbeer's estate, that the presumption always is that a person is sane. Proof of insanity carries back no presumption of its past existence. It exists only from the time when it is proved to exist. It might be conceded in this case that the death of Miss Dolbeer was self-inflicted and caused by simple melancholia, but this would show no more than that she was insane on that date, and could not have the effect of proving her insane several months before, when she made her will. Saving in the case of one born a maniac or insane, there must always be a time when a person is rational and of sound mind before the dread disease exhibits itself.

Again, the court says that three physicians were offered as witnesses in this case. It might be conceded that they were skilled alienists, but the evidence thus adduced of one who has never seen the person and who bases his opinion on the facts given in a hypothetical question, is evidence the weakest and most unsatisfactory. Such questions themselves are always framed with great particularity to meet the views of the side which presents the expert. They always eliminate from consideration the countervailing evidence, which may be of a thousandfold more strength than the evidence on which the question is based. They are astutely drawn, and drawn for a purpose, and that purpose never is the presentation of all the evidence. It is never to present the fair and accurate view, but the purpose always is to frame a question such that the answer will announce a predetermined result. This kind of expert testimony, given under such circumstances, even the testimony of able and disinterested witnesses, as no doubt these were, is in the eye of the law of steadily decreasing value. The remedy can only come when the state shall provide that the courts, and not the litigants, shall call a disinterested body or board of experts, who shall review the whole situation and then give their opinion, with their reasons therefor, to the court and jury, regardless of the consequences to either litigant. So, and so only, can it be hoped to remove the estimate of infirmity which attaches at the present time to this kind of evidence.

Authorises City Hospitals.

Chapter 22 of the Laws of Iowa of 1906 provides that in cities having a population of over 12,500 the city council may submit to the electors propositions for the constructing and maintaining of a hospital, and that three hospital trustees may be elected, who shall organize as a hospital board, which shall be vested with authority to provide for the management of such hospital and shall provide all needed rules and regulations for the economic conduct thereof. But in the management of such hospital no discrimination shall be made against practitioners of any school of medicine recognized by the laws of the state of Iowa.

Dates of Meetings of Examiners.

Chapter 114 of the Laws of Iowa of 1906 amends the law as it appears in section 2576 of the supplement to the code of that state by substituting the word "January" for the word "May" in the third line thereof, and by substituting the word "July" for the word "November" in the fourth line thereof, as the dates of the meetings of the State Board of Medical Examiners.

Provides for Sanitarium for Treatment of Tuberculosis.

Chapter 120 of the Laws of Iowa of 1906 establishes a state sanitarium for the care and treatment of persons afflicted with incipient pulmonary tuberculosis, which shall be called the State Sanitarium for the Treatment of Tuberculosis. The superintendent shall be a well-educated physician with an experience of at least five years in the actual practice of medicine, shall be appointed for a term of four years and shall receive a salary of not to exceed $2,500 a year. Among other things, he shall oversee and secure the individual treatment and profesional care of each and every patient residing in the sanitarium. He shall also endeavor to stimulate the organization and assist in the establishment of hospital dispensaries in various counties or large centers of population for the treatment of patients with advanced tuberculosis. No patients shall be received except those afflicted with pulmonary tuberculosis in the incipient stage, and who show a reasonable probability of satisfactory improvement by treatment in the sanitarium. The board of control of state institutions shall, on the recommendation of the superintendent and on the approval of the said board, appoint physicians in such localities in the state as they may deem proper, whose duty shall be to examine all persons who apply to them, and who have previously made application to the superintendent to be admitted as patients in the sanitarium. Said examining physicians shall be graduates of a medical school in good standing under the laws of Iowa, and shall be selected, so far as it is practicable, because of their experience with and knowledge of pulmonary diseases. Said sanitarium shall be open for all patients, but all patients who are able to pay shall be charged such rate monthly as the board of control may fix, not exceeding the average actual per capita cost of care, treatment and maintenance.

Skimmed Milk to be Pasteurised.

Chapter 168 of the Laws of Iowa of 1906 provides, under penalty, that every owner, manager or operator of a creamery shall, before delivering to any person any skimmed milk, cause the same to be pasteurized at a temperature of at least 185 degrees Fahrenheit.

Commission to Investigate Adult Blind.

Chapter 290 of the Laws of Maryland of 1906 provides for the appointment by the governor of a commission of five persons to investigate the condition of the adult blind in the state of Maryland and to report on the expediency of the establishment by the state of institutions for them. It shall be the duty of this commission to secure a complete list of all blind persons in the state, and make a record of their names, ages and financial condition, together with the cause and extent of their blindness, their capacity for educational and industrial training, and such other facts as may seem of value, a full report of the findings and recommendations of the commission to be filed with the governor on or before Dec. 31, 1907. It is also provided that the commission may aid those of the adult blind whom they consider worthy in finding employment, and in furtherance thereof they may furnish material and tools to an amount not exceeding $50 to any one individual, and they may place in a home or homes such indigent blind women as appear to them worthy and to have no other means of support, the total expenditure on any such woman not to exceed $200 a year.

Maryland Tuberculosis Sanatorium.

Chapter 308 of the Laws of Maryland of 1906 provides for the establishment in that state, accessible by railroad or water transportation, of an institution to be called the Maryland Tuberculosis Sanatorium which shall be under the control of a board of managers consisting of the governor, state treasurer, comptroller of the treasurer, and six other persons who shall be appointed by the governor.

Manufactures from Cast-off Clothing Prohibited.

Chapter 358 of the Laws of Maryland of 1906 adds some new provisions to article 43 of the Code of Public General Laws, title "Health," under the new subtitle, "Manufacture of Infected Articles," to follow section 34. What is designated section 34A provides that no person, firm or corporation shall be permitted to manufacture in part or in whole, any mattress, bed, cot, lounge or sofa, wool, shoddies, or shoddies manufactured from cast-off clothing or other fabric which has previously been in the use of or worn by any other person or persons. And all such manufacturers or dealers in mattresses are prohibited from making or offering for sale any such mattress, bed, cot, lounge or sofa, where wool shoddies, or shoddies manufactured from cast-off clothing are used for filling or topping in stuffing said mattresses, beds, cots, lounges and sofas. Section 34B requires a label to be sewed on said articles of manufacture, describing by name each and every material used for filling or stuffing purposes, which, in case the purchaser can not read, the seller shall read to him, and which shall be a guarantee of the material used in the article sold.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

November 17.

1 *Hereditary Chorea. C. King, Machias, N. Y.
2 *Man's Natural Protective Agencies Against Tuberculosis. S. Von Ruck, Asheville, N. C.
3 A Plea for Early Surgical Interference in Pelvic Infections. J. C. Taylor, New York.
4 Results in Roentgen Therapy. C. L. Leonard, Philadelphia.
5 *Case of Cerebrospinal Fever. W. O. Wilkes, Waco, Texas.
6 *When to Use Medicines in Pneumonia. D. Morgan, Washington, D. C.

1. Hereditary Chorea.—King calls attention to the rarity of hereditary chorea, and gives a detailed description of the movements characteristic of this affection. The general health of the patient seems to be but little interfered with for years. The sexual function seems to be but little disturbed. The duration of hereditary chorea is generally about 20 or 25 years. Nothing as yet has been found of permanent benefit in the treatment.

2. Natural Protective Agencies Against Tuberculosis.—Von Ruck concludes that under ordinary conditions of vigorous adult health and vitality the natural and uninjured protective agencies may probably be considered as effectual unless the elements of infection gain entrance in extraordinary numbers.

5. Cerebrospinal Fever.—Wilkes thinks that it is folly to quarantine meningitis while disregarding pneumonia and a number of other infectious diseases which are known to be communicable.

6. When To Use Medicines In Pneumonia.—Morgan declares that there are some cases of pneumonia which require only intelligent and systematic guidance and nursing. Others need little medicine, but when it is indicated it should be given promptly and energetically. Even in the most trying cases he says that there is little else needed than digitalis, stychnin, and ice. In nearly all cases of pneumonia it is a good plan to start with quiet and rest, unloading of the bowels when necessary, a variety of nourishing liquid food, and an ice bag on the chest in the region of the pain and congestion, and also over the precordia, if necessary. Very trying cases are those in which the patient is a steady or hard drinker. In pneumonia digitalis should be used to strengthen and nourish the heart and to reduce a rapid pulse.

Boston Medical and Surgical Journal.

November 23.

7 Classical Symptoms of Hysteria. P. Janet.
8 *New Classification of Benign Tumors of the Breast. J. C. Warren, Boston.
9 *Compound Fracture of the Patella, Tabulation of all Fractures in the Boston City Hospital in Forty-two Years. D. D. Scannell, Boston.
10 *Use and Abuse of Injections in Acute Gonorrheal Urethritis. M. R. Dinkelspiel, Philadelphia.

8. Tumors of the Breast.—Warren reports a case of tumor of the breast, in which a microscopic examination showed the tumor to be a multiple periductal fibroma, a papillary cystadenoma, showing abnormal involution with marked epithelial hyperplasia. The classification referred to is the same as that published in THE JOURNAL, July, 15, 1905, page 149, contained in the oration on surgery delivered by Warren at the 1905 Session of the American Medical Association.

9. Compound Fracture of Patella.—Scannel reports a case which illustrates the value of emphasizing the reparative power of the knee joint even under the most unfavorable circumstances. The upper three-fourths of the patella were a unit, the lower one-fourth was extensively comminuted, many of the fragments having already been lost, and others being so loose as to make removal necessary. Wherever it was impossible to remove the latter by simple curettment, excision was done. In this way the whole synovial cavity was gone over. The joint was flushed out with from ten to twelve quarts of salt solution; thoroughly sponged out with 70 per cent. alcohol; flushed out again with salt solution, and then gone over as a semi-final step with Harrington's solution. A final irrigation of ten quarts of salt solution was the end of the cleaning process. Because of the loss of bony substance in the power portion of the patella an entirely satisfactory apposition could not be secured. A purse-string suture of chromicized catgut (No. 3) was passed round the patella, through the ligamentum patellæ and the tendon of the quadriceps femoris. This suture when tightened brought into contact one fairly large solid piece of the patella with many bone chips. The capsule was sutured carefully with chromicized catgut (No. 1); the edges of the original wound were excised to make fresh surfaces. The skin wound was closed by interrupted silkworm-gut sutures; a plaster from toe to groin was placed over a sterile dressing, the leg being held in slight overextension. With daily massage and passive motion a most satisfactory result was obtained. Equally good results were obtained in seven other similar cases operated on in the Boston City Hospital. This paper also embodies a study of 38,627 fractures of all kinds treated in the hospital during the past 42 years.

10. Injections in Acute Gonorrheal Urethritis.—Dinkelspiel is opposed to the so-called abortive methods of treating gonorrhea by means of powerful astringent substances. It has been his custom to withhold injections on the part of the patient until the acute inflammation has subsided and the character of the discharge has changed from purulent to mucopurulent.

New York Medical Journal.

November 17.

11 Aids to Accuracy and Efficiency in Radiotherapy. H. G. Piffard, New York.
12 *Tuberculosis Problem in Prisons and Reformatories. S. A. Knopf, New York.
13 Technics of Lumbar Puncture in Children; with particular Reference to the Pressure of the Cerebrospinal Fluid. H. Heiman, New York.
14 *Fracture of the Anterior Superior Spine of Ilium by Muscular Action. E. L. Beebee, Buffalo.
15 *Tuberculosis Among the Indians of Arizona and New Mexico. I. W. Brewer, Ft. Huachuca, Ariz.
16 Membrane and Complications of Diphtheria. W. S. Cornell, Philadelphia.
17 Early Course and Diagnosis of Scarlet Fever. W. L. Somerset, New York.
18 Diagnosis of Typhoid Fever. R. Stein, New York.

12. The Tuberculosis Problem in Prisons.—In this paper, read before the physicians of the National Prison Association, Knopf discusses this question thoroughly. He says that the first step toward the prevention of tuberculosis in penal institutions should be a most careful examination of all individuals, and the weeding out and isolation of all tuberculous prisoners detained in jails. The tuberculous patient should remain isolated in the detention prison as well as in the penal institution, and he should be given the benefit of hygienic and dietetic treatment from the first moment he becomes a ward of the state or city. When the time for his transfer comes, the history card of his disease and the recommendation of the physician should be transmitted with the other papers of the prisoner to the penal institution. After his arrival at the prison in which he is to stay for some length of time the physician will decide whether he is able to work or not, and what kind of work might be most conducive to his recovery.

14. Fracture of Anterior Superior Spine of Ilium.—Bebee's patient, a very muscular youth of 19, was making a spurt in a race when he heard a snap and had a sudden sharp pain in his right hip and a sensation of something giving way. Forty-eight hours later the patient walked with a slight limp. The anterior superior spine of the ilium on the right side was blunted and vague in outline; while that on the left was sharp and prominent. The blunted part presented a clearly defined area of tenderness to pressure. Beneath the skin, about one inch below, was a hard angular mass, movable without crepitus. A perpendicular line from the most prominent part of the spine to the bed was farther from the top of the trochanter than on the sound side. Active flexion of the thigh against gravity was difficult and painful. Passive flexion was less than on the sound side, being limited by the interposition of the hard object. Five days later there was

more swelling about the right anterior superior iliac spine, which involved the angular mass below, making its outline less distinct. A radiograph taken at that time showed a triangular shadow corresponding to the position of the mass. Two weeks later the patient walked without perceptible limp. On examination there was still more vagueness in the outline of the injured spine. Palpation showed distinct thickening of the bone. Extending downward from it was an elongated mass of firm consistence and indistinct outlines, the provisional callus. The hard body felt before could be indistinctly made out in the lower part of the mass. Six weeks after the accident the patient could use his leg as well as ever. On examination the left anterior superior iliac spine was still blunted and thickened. Below was a slight prominence formed by a rounded mass of bony hardness, immovably joined to the bone above by a less prominent bony part. Flexion of the thigh on the pelvis was limited by the interposition of this mass. There was no treatment, no application of bandages or appliances to keep the fragment in place. Only four such cases are recorded in the literature.

15. **Tuberculosis Among Indians.**—A study of the incidence of tuberculosis among the Indians gathered together on the reservations in Arizona and New Mexico shows that these people are badly infected with this disease, although they are living in the most favorable climate. Brewer believes that this demonstrates that climate is not a specific, and that the climate of Arizona and New Mexico, although undoubtedly of benefit to persons in the early stages of tuberculosis, is of little value when the patients are underfed and surrounded by filth and live in poorly ventilated houses.

Lancet Clinic, Cincinnati.

November 17.

19 An Agreement of Reciprocity in Medical Licensure Between the States of New York and Ohio. A. Ravogli, Cincinnati.

The American Journal of Medical Sciences, Philadelphia.

November.

20 Diagnosis of Renal and Ureteral Calculi. J. W. Bovée, Washington, D. C.
21 *Environment in Therapeutics from the Standpoint of Physiology. W. B. James, New York.
22 *Physiologic Limitations of Rectal Feeding. D. L. Edsall, Philadelphia.
23 *Results of the Use of Refined Diphtheria Antitoxin, Gibson's Globulin Preparation in the Treatment of Diphtheria. W. H. Park and B. Throne, New York City.
24 *Relation of Hodgkin's Disease to Lymphosarcoma. H. W. Gibbons, San Francisco, Cal.
25 *Coagulability of the Blood in Yellow Fever. L. H. Marks, New Orleans.
26 Unilateral Paralytic Chorea. J. Grinker, Chicago.
27 Postural Treatment of Otitis Media and Mastoiditis. A. E. Schmidt, New York.
28 Paralysis of the Facial Nerve Due to the Eustachian Electro-Bougie. J. B. Solley, New York.
29 Clinical and Experimental Experience with Colloidal Silver and a Virulent Streptococcus. F. P. Vale, Washington, D. C.
30 *Production of Vascular Lesions in the Rabbit by Single Injections of Adrenalin. R. M. Pearce and L. E. Baldauf, Albany, N. Y.
31 *Bacillus Pyogenes (Nov. Spec.?) Associated with a Febrile Disease. L. K. Hirshberg, Baltimore, Md.
32 Remote Consequences of Infections of the Biliary Tract. A. O. J. Kelly, Philadelphia.

21. **Environment in Therapeutics from the Standpoint of Physiology.**—James reviews a few of the elements of environment in their relation to the treatment of disease and points out some of the ways in which modern therapeutic practice, especially in hospitals, sometimes fails to realize all that it might. He says that few hospitals are so arranged that those who are dying shall not be seen or heard by patients in neighboring beds, or so that the psychical side of the environment of the individual shall have any consideration whatever. In most institutions recovery from anesthesia takes place in the wards. James speaks particularly of the physical side of environment; that is, temperature, ventilation, barometric pressure, humidity, light, quiet, noise, etc. He makes a plea for the more general and systematic use of hospital roofs, and suggests that the architectural definition of roof be changed, as far as it applies to hospitals, and that this structure be defined as the floor of the top story.

22. **Physiologic Limitations of Rectal Feeding.**—In furnishing mental satisfaction rectal alimentation, especially water and salts, according to Edsall, is always very useful when indicated, but in a great majority of cases the actual status of rectal alimentation as a method of nourishing patients is that it is a modified and partial starvation. It does furnish some food, and is, therefore, decidedly better than simple starvation, but there is nearly always a marked degree of starvation, and should be recognized and rectal feeding not be given a higher place than it deserves.

23. **Antitoxin in Diphtheria.**—The results obtained by Park and Throne in a series of 100 cases are so definite that they think it safe to conclude that the removal of a considerable portion of the non-antitoxic globulins, as well as the albumins from the serum by the Gibson method, has eliminated much of the deleterious matter from the serum, so that severe rashes, joint complications, fever and other constitutional disturbances are less likely to occur from the antitoxic globulins than from the antitoxic serum from which it was obtained. The globulin preparation when tested by animal experiments appears to retain all the antitoxic properties of the whole serum. The portion of the globules still accompanying the antitoxin in the Gibson preparation is shown to be capable of exciting rashes and occasionally constitutional disturbances, although, as stated above, to a less extent than the serum. The authors believe that it is almost certain that methods will be devised to refine antitoxin still further, and so possibly to eliminate all appreciable deleterious effects of the antitoxic serum. Whether this globulin solution will be much less likely than the serum to cause collapse in the less rare cases of peculiar susceptibility, such as in a certain percentage of those suffering from status lymphaticus, is still undetermined. It has now been used in several thousand cases of diphtheria without accident. The concentration of antitoxin made possible by the elimination of non-antitoxic substances is not only a convenience, but of distinct clinical importance, as it tends to encourage large doses. The antitoxic globulin solution, like the serum, tends to become slightly cloudy when kept at moderate or high temperature, and substances such as solutions of carbolic acid and trikresol are especially likely to cause a precipitate to develop. The antitoxin in the globulin preparation retains its poteney about as long as that in the whole serum.

24. **Hodgkin's Disease.**—Gibbons agrees with Reed, Longcope and Simmons as to the histologic picture presented by the tissues in Hodgkin's disease, but does not agree that it is necessarily due to an inflammatory process. He asserts that, in most cases, infiltration of the capsule of the diseased glands can be observed; in many cases an extension beyond the capsule occurs, and in some cases very evident infiltration of adjacent structures. He believes that Hodgkin's disease is a process to be classified with malignant tumors.

25. **Coagulability of Blood in Yellow Fever.**—A careful study of eight cases has convinced Marks that the coagulability of the blood in yellow fever is normal. The minimum time of positive coagulation was two minutes and forty-five seconds, maximum, four minutes and twenty seconds; average, three minutes and fifty-two seconds.

30. **Infections of Adrenalin.**—Pearce and Baldauf refer to lesions in the aorta caused by single injections of adrenalin in a series of experiments made by them. Of 10 animals, four died within a few minutes after injection; of the remaining six, one of which died at the end of seven days, and five of which were killed after from 65 to 70 days, all showed very definite vascular lesions. These results, while they offer no explanation of the mode of action of adrenalin in producing vascular lesions, simplify the mode of investigation, in that the problem is limited to the study of the effect of single injections, and comparisons may be drawn sharply between lesions so produced and similar lesions caused by the prolonged administration of other substances, such as nicotin, digalen and barium chlorid. It is evident, however, that in view of these results the theory of direct toxic action is hardly tenable, while that which recognizes a combination of vasovasorum disturbance, local anemia and vascular strain is greatly strengthened.

31. **Bacillus Pyrogenes.**—Hirshberg records the case of a male patient, aged 36 years, with a pyrexia lasting eight weeks, which never rose above 102 F., who exhibited meningeal

symptoms, photophobia, tremors, irritability, subcultus tendinum, and joint involvement. The Widal reaction was constantly absent. There was a leucocytosis of 14,000. Cultures taken from the blood revealed a lemon-yellow diplobacillus pathogenic for guinea-pigs and rabbits, negative to Gram's stain, actively motile, producing no indol, but liquefying gelatin until the seventh day, and producing no gas in lactose, saccharose or glucose media. Milk, mannite and litmus agar were acidified. The organism was killed at an exposure of 60 C. for 10 minutes. It has been named *Bacillus pyrogenes*.

Journal of Experimental Medicine, New York.
October 12.

33 *Clinical and Experimental Observations on Cheyne-Stokes Respiration. J. A. E. Eyster, Baltimore.
34 *Therapeutic Experiments with Anticrotalus and Antimoccasin Sera. H. Noguchi, New York.
35 *Experimental Anemias in the Rabbit. C. H. Bunting, Charlottesville, Va.
36 An Improved Syringe for Injecting Precise Amounts. A. P. Hitchens, Glenolden, Pa.

33—See THE JOURNAL, Oct. 27, 1906, page 1383.

34. Therapeutic Experiments with Anticrotalus and Antimoccasin Sera.—Noguchi's experiments show that the action of different antivenins is highly, although not absolutely, specific for the venoms for which they are prepared. The antivenomous effect is demonstrable by experiments on toxicity (*in vivo*) and on hemolysis (*in vitro*). Anticrotalus and antimoccasin sera possess therapeutic properties of high degree. By their employment before the stage of extreme prostration has been reached, poisoned guinea-pigs can be saved. The standardization of antivenins must be made separately for the antitoxic and antihemolytic actions, since these do not bear a constant and invariable relation to each other.

35. Experimental Anemias in Rabbit.—Bunting conceives from previous work that the red marrow of rabbits normally consists essentially of cells arranged in groups; certain groups being composed of indifferent myeloblasts at the center, surrounded by myelocytes, and in the periphery close to the capillaries are the mature polymorphonuclear cells; others are composed of immature red cells or even indifferent myeloblasts at the center and surrounding layers of megaloblasts, intermediate red cells, and normoblasts and peripheral layers of mature red cells; while others show lymphoid cells forming the peripheral layers. Now in the rabbit Bunting finds that a fatal dose of ricin leads to a diminution in the number of leucocytes for a few hours, followed by an increase. The count of red cells is little changed, but nucleated reds appear early in the circulation. Saponin administered intravenously causes a destruction of red blood cells and to a less extent of the leucocytes in the circulation and also a destruction of cells in the marrow with injury to the capillary walls. There is a reduction of the red count and sharp nucleated red-cell crises and later pathologic changes in the erythrocytes.

Bunting holds that nucleated red-cell crises in the circulating blood are the expression of injury to the bone marrow, which reacts in this manner only when the mature erythrocytes at the periphery of the erythrogenetic center in it are destroyed by the action of a circulating toxin, or are depleted by excessive hemorrhage. In the first case the reaction is the more marked. Following toxic injury of the marrow with destruction of the peripheral cells of the erythrogenetic group, there is established an atypical formation of erythrocytes, resulting in pathologic forms, the most characteristic of which are the macrocytes. These appear to be derived directly from the megaloblasts without the ordinary transition through the intermediate and normoblastic stages. This condition may represent an attempt at compensatory repair. Following extensive injury to the marrow one may find the groups of blood-forming cells almost completely replaced by scar tissue. The spleen may then take on the hemopoietic function, the new cells being formed in the splenic sinuses. With subcutaneous injections of leucocytic toxins the absorption is so slow that the toxin is apparently saturated by cells in the circulation and does not reach the marrow in sufficient quantity to injure it. Under these conditions there is blood destruction but no nucleated red-cell crises in the circulation, and the marrow picture is one of hyperplasia such as is seen after hemorrhage, i. e., the marrow of a secondary anemia.

Surgery, Gynecology and Obstetrics, Chicago.
October.

37 Lateral Aberrant Thyroids. V. L. Schrager, Chicago.
38 *Pathologic Anatomy of Exophthalmic Goiter. D. D. Lewis, Chicago.
39 *A Rare Case of Hermaphroditism. J. C. Webster, Chicago.
40 A Specimen of Fetus Amorphous Anideus. J. C. Webster, Chicago.
41 *Affections of the Eye in Relation to Pelvic Disorders. J. C. Webster, Chicago.
42 *Case of Abortion in a Myomatous Uterus. J. C. Webster, Chicago.
43 Appendicitis Larvata. A. D. Kohn, Chicago.
44 *Primary Malignant Tumors of the Infant Uterus. P. Findley, Omaha, Neb.
45 *Healing of Suppurative Appendicitis with Calcification. C. J. Rowan and H. G. Wells, Chicago.
46 Injuries to the Urethra—Traumatic Strictures, and their Rational Treatment. J. M. Neff and V. L. Schrager, Chicago.
47 Clinical Significance of Cervical Ribs. J. B. Murphy, Chicago.
48 Congenital Hypertrophic Pyloric Stenosis of Infants. G. F. Thompson, Chicago.
49 Case of Ischuria in a Patient with Retrodexio-Version of the Gravid Uterus. E. N. Reed, Chicago.
50 Case of Torsion of the Greater Omentum, Intra-abdominal, with Remarks. F. D. Smythe, Memphis, Tenn.
51 High Operation for Varicocele. D. D. Lewis, Chicago.
52 Management of Breech Presentations. H. F. Lewis, Chicago.
53 *A New Hydrodynamic Bag Cervical Dilator. R. H. Pomeroy, Brooklyn, N. Y.
54 Elimination of Cavities in Operative Wounds. R. von Mosetig-Moorhof, Vienna.

38. Pathologic Anatomy of Exophthalmic Goiter.—Lewis found that histologically, primary exophthalmic goiter is characterized by an excessive epithelial proliferation with the formation of large, irregular follicles, which are filled with papillary ingrowths. The epithelial cells become cylindrical, and histologically the processes of secretion do not differ from those described by Anderson in the normal gland, stimulated to increased secretion by injections of pilocarpin. The same histologic changes have been described in the gland when undergoing compensatory hypertrophy (Halsted, Hurthle). The colloid, when present, is finely granular and stains faintly, although in some sections a dense, heavily staining colloid may be found. The colloid is formed both as a secretion and as a product of degeneration. The goiter in the secondary cases does not differ histologically from the simple colloid or parenchymatous goiter on which the symptoms were grafted. The evidences of increased secretion described by Farner in these cases are inconstant. The clinical course of the secondary cases is less severe, and the prognosis is better in these cases, both as regards immediate recovery from operation and later recovery from disease. While it is impossible to judge of the secretion of the gland from histologic studies, it may be that the primary cases are associated with dysthyroidism, and the secondary with hyperthyroidism.

39. Rare Case of Hermaphroditism.—Webster records the case of a man, aged 33, married four years, the father of twin children, who was kicked in the abdomen by a horse. Twenty-three hours afterward the abdomen was distended and very painful, and there was constant vomiting. As he had had for four years a large left irreducible inguinal hernia, a diagnosis of strangulation of the latter was made, and operation was carried out. The inguinal canal and scrotum on the left side were found to contain no intestine, but, instead, a mass which resembled an adult uterus, Fallopian tubes, ovaries and broad ligament. The cervix was adherent to the internal ring and was divided, the entire mass being removed. The abdomen was then opened in the middle line, extensive septic peritonitis being found. Extending from the left inguinal ring a ligament resembling the female broad ligament stretched to the right side of the pelvis. To this was attached a structure exactly resembling an ovary. This was not removed, as the man was much collapsed. Death occurred two hours after the operation, and no autopsy could be obtained.

The specimen as presented to Webster bore a marked resemblance to the internal genitals of an adult female as removed by supravaginal hysterectomy. The portion of uterus removed from the prostate corresponds to the body of the adult female multiparous uterus. The Fallopian tubes resemble those of the adult female, the right tube being 9 cm. in length and the left 8 cm. The outer end of each is marked by a number of short fimbriæ, the longest of which is in-

ferior, extending toward the testicle, resembling the ovarian fimbria of the adult female. The orifice of the tube is smaller than that in the female. The testicles occupy the position of the ovaries in the adult female, and only differ from them in being smoother. For a complete report of the findings the reader is referred to the original article.

41. **Affections of Eye in Relation to Pelvic Disorder.**—Webster reports two interesting cases. In one instance the patient suffered from sore eyes for eight years. She had her eyes treated regularly, but without any marked benefit. Because of pathologic conditions in the pelvis, Webster performed a vaginal panhysterectomy. Within 10 days of the operation the eyes became quite normal, and there has been no return of the trouble. The other patient complained of sore eyes, bleeding from eyes and nose, irregular menstruation, headaches and nervousness. Treatment of the eyes was of no avail. Conditions in the pelvis demanded an abdominal section, one ovary being removed. Within a few days of the operation the eyes became normal. Shortly afterward, about three months, the patient returned, again complaining of her eyes. Removal of the remaining ovary was demanded and the request was acceded to. The eyes improved at once and there has been no return of the trouble.

42. **Abortion in a Myomatous Uterus.**—Webster reports a case of this kind in which myomectomy and removal of the uterine contents were carried out by abdominal section.

44. **Primary Malignant Tumors of Infant Uterus.**—Findley reviews eight cases previously recorded in the literature and adds one personal case.

45. **Healing of Suppurative Appendicitis with Calcification.**—Two cases are reported by Rowan and Wells. In the case of the first patient, who died of peritonitis and chronic nephritis, the condition was discovered at the autopsy. Apparently at some previous time this individual had suffered from an appendicitis, with formation of an abscess. This abscess had ruptured into the ileum and discharged the greater part of its contents into the bowel; the wall of the abscess, or at least the lower part of it, had then undergone calcification. Because of its location, and the fact that there were no adhesions to the surrounding surfaces, no trouble had resulted from either the calcified mass or the adhesions. The second patient was operated on for intestinal obstruction probably due to a band of adhesions resulting from a previous attack of appendicitis. At the place of adhesion could be felt a stony hard disk which seemed to be incorporated in the wall of the bowel. On attempting to cut through the hard disk which formed the adhesion of the bowel, it was found to be calcified. The disk was left in the wall of the proximal end of the loop, as its removal would have left a large defect in the wall of an already contracted intestine, the repair of which would have left a serious degree of stenosis. The patient died 20 hours after the operation.

53. **New Hydrodynamic Bag Cervical Dilator.**—Pomeroy presents a new form of hydrodynamic bag that provides a uniform dilating force applied at the actual zone of resistance, and states that it is at least equivalent in safety and efficiency to manual dilatation, without the fatiguing effects of that procedure on the operator. The apparatus may be described as consisting of two bags, or compartments, combined. The upper or anchor compartment is inflatable by a tube which passes through the lower. The upper compartment, when distended, lies above the point of constriction of the cervix, anchors the apparatus and measures the degree of dilatation at which the apparatus will slip out. The direct dilating effect is produced by gradual inflation of the lower compartment. The smaller or preliminary apparatus can be introduced through a cervix admitting one finger. The larger can be introduced as soon as the small size has done its work and is expelled. The small apparatus is straight, the large one has a pelvic curve, and is conformed in dimensions to the size and shape of the normally distended birth canal.

These double-compartment dilators have been used by Pomeroy with encouraging results in eight cases of eclampsia and in one of placenta prævia centralis. Only one accident has occurred. This was with a large size bag used in a seven months' primipara, an eclampsia case. At this time the small-size dilator had not yet arrived from the manufacturer and the curved lower apartment had not yet been devised.

Brooklyn Medical Journal.
November.

55 Physiologic Action of the Roentgen Ray. C. Eastmond, Brooklyn.
56 Epithelioma of the Ear. W. C. Braislin, Brooklyn.
57 *Descensus Ovariorum. F. J. Shoop, Brooklyn.
58 Hemorrhagic Disease of the New-Born. C. H. Goodrich, Brooklyn.
59 *Case of Typhoid Fever. J. R. Stivers, Brooklyn.
60 An Obstetrical Incident. W. C. Schoenijahn, Brooklyn.

57. **Descensus Ovariorum.**—Shoop sums up his paper as follows: 1. The non-adherent ovary merely displaced with the uterus is usually cured by correcting the uterine deviation. 2. The adherent ovary should be released from its adhesions by manipulation or by operation. 3. The slightly displaced ovary, non-adherent, not tender and causing no trouble, should be left alone, but the patient should be warned that it may give trouble later. 4. A moderately displaced ovary, tender but not enlarged, may be cured by non-surgical means, but in many instances, perhaps in the majority, relapse occurs after so-called cures and later an operation is required. 5. A badly prolapsed ovary, more or less painful and enlarged, is a diseased ovary and is never cured except by resection or extirpation.

59. **Typhoid Fever.**—Stovers reports a case of typhoid in which convalescence was complicated by a phlebitis of the left internal saphenous vein. The swelling of the leg disappeared in a few days by the aid of elevation and hot applications, and convalescence seemed again established when the patient developed sudden severe pain in the right iliac region, accompanied by vomiting, and an increase in the temperature and pulse. An ice coil was placed over the region of the appendix, small doses of calomel were given and morphia hypodermically in sufficient quantity to relieve the intense pain. Within 48 hours the pain had left the region of the appendix and had gone down to the right testicle, which began to show signs of inflammation. Two weeks later fluctuation was detected and an incision was made which was followed by a copious discharge of pus.

Albany Medical Annals.
November.

61 Address Delivered Before Albany Medical College, Sept. 25, 1906. S. B. Ward, Albany.
62 Case of Hypernephroma of the Kidney. J. M. Berry, Troy, N. Y.
63 Acne Vulgaris. J. W. Wiltse, Albany.
64 *Hysteropexy Followed by Repeated Pregnancies. J. D. Montmarquet, Cohoes, N. Y.

64. **Hysteropexy Followed by Repeated Pregnancies.**—Montmarquet reports three cases in which hysteropexy was performed for retroversion; and in which pregnancy occurred repeatedly and went on to full term without interruption. In all these cases miscarriage occurred before the suspension was performed; and after the operation, pregnancies, two in one case, three in the other, and one in the last, went on to happy terminations, and labor was as easy in all cases as it ever was before the operations.

Vermont Medical Monthly, Burlington.
October 15.

65 Preventive Medicine. B. H. Stone, Burlington.
66 *Erythema Nodosum. W. L. Wasson, Waterbury, Vt.
67 *Eclampsia. R. M. McSweeney, St. Johnsbury.
68 The Value of Blood Examination in Diagnosis. W. G. Ricker, Wells River.
69 Vibration Massage, Its Application to Disease. C. K. Johnson, Bristol.

66. **Erythema Nodosum.**—Wasson reports four typical cases of erythema nodosum which occurred in a locality where the condition was unknown previously.

67. **Eclampsia.**—If the amount of urinary secretion or the amount of urea is abnormally small, McSweeney prescribes:

℞. Potassii acetatis
Potassii bitartratis
Potassii citratis, āā.....3ii 8
Decocti tritici q. s. ad.....℥viii 240

M. Sig.: Shake well. A teaspoonful four times a day.

This acts as a diuretic and a laxative.

American Journal of Surgery, New York.

November.

70 Does Syphilis in Some Cases Spontaneously Abort in the Primary Stage? R. W. Taylor, New York.
71 Subcutaneous Rupture of Abdominal Viscera, with Especial Reference to the Intestine and Kidney. E. Eliot, Jr., New York.
72 Gonorrheal Arthritis in Children. V. P. Gibney, New York.
73 Gonorrheal Ophthalmia in Children. C. H. May, New York.
74 Absence of Vagina; Double Uterus. J. E. Walker, Hornell, N. Y.
75 Abdominal Tumors in Children. L. Fischer, New York City.
76 Tuberculous Lymphadenitis and Its Surgical Aspect. H. Wilkinson, Kansas City.

Journal of Medical Society of New Jersey, Orange.

November.

77 Surgical Treatment of Gastroptosis. H. D. Beyea, Philadelphia.
78 Etiology, Pathology and Treatment of Fibroid Tumors of the Uterus. G. H. Balleray, Paterson.
79 Prevention of Scarlatinal Nephritis. F. McEwen, Newark.
80 Some Interesting Cases of Extrauterine Pregnancy. J. S. Baer, Camden.

Mississippi Medical Monthly, Vicksburg.

November.

81 Organization. D. W. Jones, Fernwood.
82 Three Cases of Acute Intestinal Obstruction. H. L. Sutherland, Rosedale.
83 Two Recent Obstetrical Cases. B. F. McNeal, Leota.
84 Hematuria. J. W. Bennett, Brookhaven.
85 Abortive Form of Lobar Pneumonia. W. T. Mathews, Greenwood.

Journal of the Association of Military Surgeons of the United States, Carlisle, Pa.

November.

86 Sanitary Condition of the Imperial Japanese Army During the Late Russo-Japanese War. S. Suzuki, I. J. Navy.
87 Elisha Kent Kane—A Sketch. J. C. Wise, U. S. Navy.
88 United States Marine-Hospital, at San Francisco, and the Great Earthquake and Fire of 1906. H. W. Sawtelle, U. S. P. H. and M.-H. S.
89 Anatomic Characteristics of Opisthorchis Sinensis, and the Statistics of Its Occurrence in the United States. M. J. White, P. H. and M.-H. S.
90 The Oregon National Guard at the San Francisco Earthquake Disaster. W. E. Carll.
91 Wheeled Kitchen for Troops in the Field. H. Mareschal.
92 Tuberculosis in the Military Service. G. E. Bushnell, U. S. Army.

New Orleans Medical and Surgical Journal.

November.

93 The Menstrual Cycle; Its Normal and Morbid Psychology. D. E. M. Hummel, Jackson, La.
94 A Peep into Foreign Surgical Clinics. J. D. Bloom, New Orleans.
95 Difficult Diagnosis of Yellow Fever Cases. L. Sexton, New Orleans.
96 Requirements of the Mosquito Doctrine. S. L. Theard, New Orleans.
97 New Orleans Yellow Fever in 1905. S. L. Theard, New Orleans.
98 Case of Mutism in Typhoid. L. G. LeBeuf, New Orleans.
99 Faulty Metabolism in Young Children. T. S. Dabney, New Orleans.
100 Case of Suppurating Sub-urethral Cyst. C. J. Miller, New Orleans.

Archives of Ophthalmology, New Rochelle, N. Y.

September.

101 Refraction at a Toric Surface. H. C. Lomb, Rochester, N. Y.
102 Quinin Amaurosis. F. J. Parker, New York.
103 Case of Microphthalmus with Upper-Lid Cyst. C. H. May and W. A. Holden.
104 A Time-Saving Addition to Test-Type Cards. H. Lowell, Boston, Mass.

Annals of Gynecology and Pediatry, Boston, Mass.

October.

105 Ectopic Gestation. H. F. Quackenbos, New York City.
106 What is Meant by Knowing a Child's Constitution. L. F. Bishop, New York.
107 Ophthalmia Neonatorum. F. J. C. Fitzgerald, New York City.

Virginia Medical Semi-Monthly, Richmond.

October 26.

108 Address of President, Medical Society of Virginia. L. Gwathmey, Norfolk, Va.
109 Treatment of Some Eye Diseases by the General Practitioner. O. Wilkinson, Washington, D. C.
110 Infant Feeding. R. W. Garrett, Viewtown, Va.
111 Present State of Our Knowledge in Regard to Proteid Constituents of the Animal Body. J. W. Mallet, Charlottesville, Va.
112 Value of the Reflex Arc in Diagnosis. M. R. Hughes, St. Louis.
113 Case of Extrauterine Pregnancy. K. Ruffin, Norfolk.
114 Diseases of the Pharynx and Tonsils Due to Faulty Metabolism. C. P. Jones, Newport News, Va.

The Post-Graduate, New York.

November.

115 Case of Hematemesis Complicating Malaria. J. G. Hunt, New York.
116 Presentation of Specimens of Ectopic Gestation, Cancer of Breast and Immense Fibroid of Uterus. S. Lloyd, New York.
117 Preventive and Abortive Treatment of Mastoiditis. W. S. Bryant, New York.
118 Local Treatment of Women. S. S. Graber, New York.
119 Pericarditis. W. H. Porter and J. G. Hunt, New York.
120 Trachelo-Hysterotomy; Its Scope and Technic. A. Brothers, New York.

Louisville Monthly Journal of Medicine and Surgery.

November.

121 Conical Cornea. W. Cheatham, Louisville.
122 Consumption. T. H. Baker, Louisville.
123 Diagnosis and Treatment of Incipient Tuberculosis. W. F. Boggess, Louisville.
124 Some Common Errors in the Diagnosis of Syphilis. I. N. Bloom, Louisville.

Maryland Medical Journal, Baltimore.

November.

125 Tuberculosis of Cattle—How It May Be Repressed, and Its Relation to the Public Health. L. Pearson, Philadelphia.
126 Some of the Many Uses and the Method of Administering Normal Salt Solution. A. A. Matthews, Spokane, Wash.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

November 3.

1 Influence of Rainy Winds on Phthisis in Twenty-three Parishes of North Devon. W. Gordon and J. R. Harper.
2 *Causes, Sequelæ and Treatment of Pericolic Inflammation. D. Power.
3 *A Case of Appendicitis. O. W. Andrews.
4 *Concealed Accidental Hemorrhage. A. H. Wright.
5 *Chronic Metritis and Arteriosclerotic Uterus. W. Gardner and J. R. Goodall.
6 *A Study of 146 Consecutive Cases of Ventrofixation of the Uterus. A. E. Giles.
7 *Changes in Uterine Fibroids After the Menopause Considered with Reference to Operations. C. A. L. Reed.
8 *Indications for Cesarean Section Other than Pelvic Deformities or Tumors. H. L. Reddy.
9 Uterine Abscess; Metritis Desiccans. J. W. Wallace.
10 Treatment of Eclampsia. D. J. Evans.
11 *Surgical and Serum Treatment of Puerperal Sepsis. L. S. McMurtry.
12 A Study of Seventy Cases of Ectopic Gestation. J. F. W. Ross.
13 Ectopic Pregnancy, (To be continued). M. Cameron.

2. **Pericolic Inflammation.**—Power says that pericolitis is not very rare, although it is one of the less common forms of local peritonitis. It occurs in connection with the ascending as well as with the descending colon, but he has seen no case in which it arose in the neighborhood of the transverse colon. The cause of pericolitis may be found within the colon as a result of chronic constipation, in the walls of the colon from ulceration of the mucous membrane or from the perforation of foreign bodies, outside the colon as a result of injury. Pericolitis ends in resolution, in chronic inflammation, sometimes with extensive thickening of the colon, or in suppuration, which is usually retroperitoneal. The treatment consists in an attempt to prevent the inflammation becoming chronic, and in the early opening of any abscess which may be formed.

3. **Appendicitis.**—The special points of interest in Andrews' case were the following: (a) Presence of stercolith; (b) colitis and discharge of pus and slimy mucus from rectum; (c) passage of an *Ascaris lumbricoides* fourteen days after the operation.

4. **Concealed Accidental Hemorrhage.**—Wright believes that death is not generally due to the long-continued hemorrhage, but that in a certain, and probably large, proportion of cases of concealed accidental hemorrhage the symptoms are due to shock only, and not at all to loss of blood.

5. **Chronic Metritis.**—Gardner and Goodall report nine cases and summarize their conclusion as follows:

1. Clinically we recognize simple and complicated metritis. By simple we mean a disease of the uterus without participation of the other pelvic organs in the disease process. By complicated we mean one of obviously inflammatory or congestive origin with participation of other parts in the pathologic processes. The uterus here is simply involved in a change which affects the whole or most of the genital system.

2. Pathoiogically cases of simple metritis divide themselves into two distinct groups:

(a) Those which, arising from infection, subinvolution, or from one of many other causes, show a degeneration more of the nature of an inflammatory deposit, or a deposit of passive congestion, which deposit is characterized by being granular, or hyaline, frequently fragmented, poor in nuclei, and affecting both muscle and fibrous tissue, but chiefly the latter. The deposit is most marked where the tissue is of loose texture. In these cases the adventitia

is most affected, and the media moderately, but it is very seldom that changes are found in the intima.

(b) Those of true arteriosclerotic origin, characterized by true fibrosis of the uterine wall and arteriosclerotic changes in the vessels, all three coats of which are usually involved.

3. Cases of arteriosclerotic origin are not due to infection, and those of the other group may or may not be due to infection depending on the cause.

4. Subinvolution, from whatever cause, is the most frequent source of chronic metritis.

5. In all cases of chronic metritis not arising from arteriosclerosis there is hypertrophy of the muscle, as well as of the non-contractile element and the muscle hypertrophy is either due to incomplete involution or it is a result of congestion.

6. In cases of arteriosclerotic origin there may or may not be muscular hypertrophy associated with the fibrosis. This will depend on associated conditions.

7. Changes in the endometrium, in the nature of endometritis will be found in cases of Group a of septic origin, but in group b the cause is primarily arterial, and endometritis may be secondary, but can not be primary except by association of two diseases.

8. The hemorrhages are not due to endometritic changes, but endometrial involvement may accentuate the flow.

9. The menorrhagia and metrorrhagia are due in some cases to muscular insufficiency, not only of the uterine muscle but of the muscle of the arteries also.

10. The muscular insufficiency is due to the restraining influence of the increased non-contractile tissue.

11. The hemorrhage in arteriosclerotic uteri is due to pelvic congestion and high arterial tension, with lack of contractility of the vessels in response to vasomotor stimuli, combined with muscular atrophy of the uterine wall.

12. The lumina of the vessels do not suffer to any great extent from the proliferation of the intima, and the change is one of compression.

13. Many vessels must be examined in serial section in order properly to appreciate how much they are involved.

14. The general changes throughout the uterine wall in cases of fibroids or fibromyomata of the uterus, are similar to those in Group c, and that the hemorrhages arise from the same cause as those cases which fall in Group c.

6. Ventrofixation of Uterus.—The operation, according to Giles is of value: 1. In cases of movable retroversion of the uterus when pessaries have been tried without success; when the uterus retains its position as long as pessaries are worn, but falls back as soon as they are removed; and in cases in which the patient prefers a radical procedure to pessary treatment and the consequent repeated examinations. 2. In cases in which the uterus is held down by adhesions in a position of retroversion. 3. In cases in which a retroversion is complicated by disease of the appendages. 4. In cases of prolapse and of total procidentia.

Coexistent abnormal conditions, he says, should be treated at the same time whenever possible. Thus, when there has been menorrhagia or endometritis the uterus should be curetted; a torn cervix should be repaired; a hyperplastic cervix should be amputated; small and solitary fibroids should be removed; prolapse of the vaginal walls should be treated by colporrhaphy or perineorrhaphy, or both; and diseased appendages should be treated by conservative procedures, or by removal, according to the nature of the case.

As to the results of ventrofixation, Giles claims that in the event of pregnancy following operation there is a slightly increased risk of abortion, but about 80 per cent. of patients have an undisturbed pregnancy and a normal confinement, and the operation does not entail any added risk at the time of labor. Pregnancy has a slight disturbing influence on the position of the uterus, but in over 80 per cent. of cases the uterus maintains its position, in spite of pregnancy. In cases not followed by pregnancy the operation is permanently successful in 95 per cent. The abdominal scar gives trouble in only 2 or 3 per cent. of cases. The operation leads to marked improvement in the patient's general condition in about 90 per cent. of cases.

7. Changes in Uterine Fibroids After Menopause.—In view of the natural history of fibroids of the uterus, the natural history of the menopause, the degenerative changes and consequent complications to which such growths are liable, particularly following the menopause, and of clinical facts and statistical records, Reed says: 1. The only safe place for a fibroid of the uterus, however small or large, however soft or hard, however recent or old, is outside of the patient's body. 2. The menopause is a poor surgeon. 3. There are certain fibroids of the uterus that ought to be relegated to operation without reference to either the nearness or the remoteness of the menopause. Thus, tumors that cause recurrent hemorrhages of increasing severity that not only debilitate but threaten practically to exsanguinate the patient; tumors of progressive and rapid growth, whether they induce hemorrhage or pressure or not; tumors whether large or small, active or indolent, so situated that they by pressure interfere seriously with either the circulation of the blood, the excretion of the urine, the activity of the bowels, or the functional integrity of the nervous system; tumors that become the seat of either suppuration or malignant degeneration. 4. It follows, therefore, that the only cases concerning which any question as to the expediency of operation may arise are those in which the tumor does not cause hemorrhage or exert pressure or present evidences of either infection or malignancy, or that has ceased to grow and in which some condition, not connected with the tumor itself, makes operative interference the more dangerous policy. 5. Patients who choose to adopt a waiting policy should be apprised of all the danger incident to such a course and should be admonished to place themselves under professional observations at frequent intervals.

8. Indications for Cesarean Section.—Reddy believes that Cesarean section is to be considered when the os is dilated for one hour and the head does not engage at the brim. In cases of hypertrophic elongation of the cervix, or with a hard and undilated and undilatable os due to cicatricial tissue, a narrow vagina, and varices about the vulva and in the vagina—and labor present—no other operation will give such good results as section. Cases of valvular lesion of the heart, failing compensation with congestion of the base of the lungs, can be best treated by section.

11. Serum Treatment of Puerperal Sepsis.—McMurtry believes that antistreptococcic serum is without value in the treatment of this disease.

The Lancet, London.

November 3.

14 *Gastrostaxis or Oozing of Blood from the Mucous Membrane of the Stomach. W. H. White.
15 *Acute Duodenal Perforation. D. Power.
16 *Saccular Theory of Hernia and the Radical Operation. R. H. Russell.
17 *So-called Virulent Syphilis and Its Treatment. F. J. Lambkin.
18 Interstitial Nephritis and Cirrhosis of the Suprarenal Capsules in an Infant Five Weeks Old. G. Carpenter.
19 *Diagnosis and Localization of Tumors of the Frontal Regions of the Brain. T. G. Stewart.
20 *Infantile Mortality and Goat's Milk. W. Wright.
21 *Actinomycosis of the Cheek Cured by Iodid of Potassium. R. Knox.
22 Spa Treatment of Cardiac Dilatation. W. B. Jones.

14. Gastrostaxis.—In a series of 2,246 postmortem examinations White found this condition to have existed 16 times. In 6 of these 16 cases it may have been due, he says, to backward pressure from disease of the heart, for a serious valvular disease was present; in 6 there was serious organic disease in the abdomen, the condition in each being gangrene of the bowel, and gastrostomy had been performed for malignant disease of the esophagus, carcinoma of the gall bladder, intra-abdominal abscess, general peritonitis following disease of the appendix, and carcinoma of the pylorus. Of the remaining four cases, two ended fatally from lobar pneumonia, one from general tubercle, and in one there was general arterial atheroma. There were 7 females and 9 males. The ages varied from 16 to 69, over half of the cases occurring in patients over 40 years of age. White does not offer any theory as to the cause of gastrostaxis. He reports 29 cases culled from the literature.

15. Acute Duodenal Perforation.—Power discusses the clinical history of this condition and repeats his well-known views as to treatment.

16. Saccular Theory of Hernia.—This theory rejects the view that hernia can ever be acquired in the pathologic sense, and maintains that the presence of a developmental peritoneal diverticulum or sac is a necessary antecedent condition in every case of ordinary abdominal hernia. Russell says that this theory bids us to abandon all recent devices; it demonstrates the reason why all operations that have hitherto been devised have yielded imperfect results. It places the finger not merely on the defects of all operations for hernia: it denies that any formal operation such as could be associated with the name of a particular surgeon can be of real and comprehensive utility. It answers the obvious comment that will be made on this last statement to the effect that excellent results are obtained by various operations, by pointing

out that the excellent results occur only in the cases in which the sac happens to be perfectly removed. It presents us incidentally with a curious seeming paradox; for while on the one hand it shows that there can be no such thing as an operation for hernia, it assures us, on the other, that there can be no such thing as a hernia that is not curable by operation. It promises practically perfect results in the future, far more perfect, at any rate, than have ever yet been attained by any operator or operation; but it imposes the three following conditions: First, the surgeon shall concern himself with the peritoneo fascial layer of the abdominal wall alone. Second, he shall be prepared for the recognition of any and every variety of hernial sac, and ready with the appropriate measures for dealing with each. Finally (and this will follow naturally from the former two), he shall fully recognise that in the event of recurrence the explanation is not to be found in the weakness of the patient's muscle, but must be sought a little nearer home.

17. **Treatment of Virulent Syphilis.**—Lambkin reports ten cases of so-called virulent syphilis and endorses the efficacy of the intramuscular injection of calomel in the treatment of such cases. He injects one grain, twice a week, until its physiologic effects are apparent, when he substitutes mercurial cream for it. It is his custom, if all goes well, to give an injection once a week for a month at a time.

19. **Diagnosis of Tumors of Frontal Region.**—Stewart states that in diagnosing a tumor of the frontal region we have to rely on (a) the presence of the general symptoms of intracranial growth; (b) the presence of mental symptoms; and (c) the absence of focal signs pertaining to other regions of the brain. For localization we must study the nature of any fits which may occur and be guided by the following signs: 1. Those homolateral to the tumor: (a) the earlier development and greater intensity of the optic neuritis; (b) the presence of a fine vibratory tremor in the extended limbs; (c) the presence of focal cranial nerve symptoms; and (d) the presence of local external signs. 2. Those contralateral to the tumor: (a) diminution or loss of the superficial abdominal or epigastric reflexes; (b) the presence of an extensor or indefinite plantar response with increase of the deep reflexes; and (c) hemiparesis. Though one or more of these signs may be absent it will be found that the majority of cases of tumor of the frontal lobe can be accurately diagnosed and localized, and this is the more important as there is no other region of the brain, with perhaps the exception of the cerebellum, in which surgical interference can be advised with a greater prospect of success and with so little danger to the subsequent physical and mental condition of the patient.

20. **Infantile Mortality and Goat's Milk.**—Wright recommends the use of goat's milk in place of cow's milk in the artificial feeding of infants.

21. **Actinomycosis of Cheek.**—In the case reported by Knox, that of a girl, 7½ years of age, the infection is believed to have occurred through faulty teeth. The defective teeth were removed, the mouth was kept clean with an antiseptic mouth wash and the patient was given iodid of potassium in increasing doses until a maximum of 45 grains *per diem* was reached. Ten months after the commencement of treatment the patient was in good health and the swelling had disappeared, leaving a firm cicatrix with very slight disfiguring.

The Practitioner, London.

October.

23 Abdominal Pain in Diseases of the Pelvic Organs. A. Donald and J. D. Lickley.
24 *Acute Abdominal Pain. C. M. H. Howell.
25 Anuria. W. H. C. Greene.
26 Demonstrations on Diseases of the Nervous System. H. C. Thomson.
27 Recurrent Swelling of the Dorsum of the Hand Associated with the Appearance of Bruising Following a Blow. T. Fisher.
28 Serumtherapy. W. D. Emery.
29 *Some Clinical Features of Colica Mucosa. D. M. Macdonald.
30 Dyspepsia Due to Gallstones. H. R. Day.
31 Review of Tropical Diseases. R. T. Hewlett.
32 Review of Recent Work in Venereal Diseases. J. H. Lane.

24. **Acute Abdominal Pain.**—In all cases in which the onset has been very severe, Howell says that the patient should be kept under close observation, and the following points relied on for making a diagnosis and at the same time indicating immediate operative treatment: (1) Increasing rapidity with diminution of volume of the pulse, especially if associated with a falling temperature. (2) Any indication of free gas or fluid in the abdomen. (3) Diminishing movements of the abdomen during respiration. (4) Gradual concentration of pain and tenderness at one particular spot in the abdomen, corresponding to the site of the lesion and gradual diffusion again from this spot as general peritonitis sets in. Cases, however, will occur, he says, in which, after the most careful consideration, it is impossible to make a certain diagnosis. In these, should the collective evidence point to the probability of rupture, an exploratory operation should be performed at once, lest delay, which hourly lessens the patient's chance of recovery, should cost him his life.

29. **Colica Mucosa.**—MacDonald has found lavage of the bowel and rectal injection of olive oil, periodically, beneficial. He favors daily injections of half an ounce of sulphate of magnesia, with two drams of glycerin in a pint of tepid water, given preferably in the morning and during the acute stage of the disease. After some time, a pill containing iron, nux vomica and belladonna is gradually substituted for the injection. Massage of the bowel, he says, through the abdominal wall, is of distinct benefit, and the use of a ball, weighing about 4 pounds, can be taught the patient, so that he can daily practice massage in this way. A complete dietary, containing indigestible residual material in a large proportion, will not apply in every case, but each one must be taken and treated separately, after consideration of all the elements of the case and tentative trial of various dietetic measures.

The Indian Medical Gazette, Calcutta.

October.

33 Bilious-Typhus Relapsing Fever. W. T. McCowen.
34 Surgical Shock—Postoperative. H. Smith.
35 The Anchylostomes of Burma and Assam. J. W. W. Stephens.
36 An Account of Plague in Bengal. W. W. Clemesha.
37 Pneumococcic Infection of Joints. K. K. Chatterji.
38 A Case of Osteomalacia. W. H. Casely.
39 Distomum Crassum. H. Lyndoh.
40 Poisoning by Myrobalans. F. N. Windsor.

Presse Médicale, Paris.

41 (XIV, No. 81.) Grossesse gémellaire monoamniotique (twin pregnancy). C. Jeannin.
42 *Should We Sleep After Eating?—Doit-on dormir après les repas? A. Martinet.
43 (No. 82.) Spécificité des anticorps sensibilisatrice et alexine. L. Halilon.
44 *Origine intestinale de l'anthracose pulmonaire. G. Petit.
45 (No. 83.) Diagnostic de la trypanosomiase dans la race blanche (in whites). L. Nattan-Larrier.
46 (No. 84.) *Les corpuscules de Négri et le parasite de la rage (of rabies). V. Babes (Bucharest).
47 Campaign Against Plague in Japan.—La lutte contre la peste au Japon. P. Desfosses.

42. **Need for Repose After Meals.**—Martinet summarizes his conclusions in the statement that in vigorous health there is enough blood to attend to both digestion and exercise of other organs. On the other hand, if the organism is debilitated from any cause, the blood attending to the task of digestion leaves the other organs with such a scanty supply that they should not be called on for any work at this time. Nature announces this by lassitude and somnolency. Whether rest is needed after eating is thus an individual matter, although it is well to advise against a nap after dinner in case of heart disease, arteriosclerosis, obesity and a tendency to apoplexy. Persons in this category should rest before eating.

44. **Intestinal Origin of Anthracosis.**—Petit writes from Lille to announce that clinical experience is confirming the intestinal origin of anthracosis as proclaimed by Calmette. He introduced into the stomach of six infants less than a year old from 15 to 20 c.c. of water holding in suspension a teaspoonful of a mixture of equal parts of wood and animal charcoal. The children were all tuberculous or in an advanced stage of athrepsia. The mixture was easily introduced through an urethral sound, without the slightest inconvenience, the injection being repeated two or three times at intervals of several days. Most of the charcoal was voided in the stools, but when the infants succumbed to the progress of their disease considerable deposits of the black particles

were found in the lungs and pleura of the tuberculous children while none was found anywhere in the two infants with athrepsia. In one child with pulmonary tuberculosis the black particles were found in the intestine, mesenteric glands, lungs and pleura. In one infant with tuberculosis and diarrhea they were found in the mesenteric glands, lungs and pleura, and in another in the tracheobronchial glands, as well as in the lungs and pleura. Macroscopic localizations in the lungs in two tuberculous children were exactly the same as in Calmette's experimental work. The absorption of insoluble particles thus leads readily to deposits in the lungs in tuberculous children whose mesenteric gland barriers are already broken down. Physiologic anthracosis becomes established and increases in proportion as human beings swallow anthracogenic dust and their glands become more and more permeable. It proved impossible to induce anthracosis of the lungs in young guineapigs by way of the digestive tract. The condition of the mesenteric glands is the deciding factor.

46. **Negri Bodies in Rabies.**—Babes has been conducting extensive research on this subject and his interpretation of the findings differs in some respects from those of others. He confirms the almost constant presence of the Negri bodies in rabies, but regards them as the expression of a powerful local reaction on the part of the cell to the invasion of the actual parasite, terminating in the encapsulation and sequestration of the parasite by the cell. This reaction is probably the expression of a greater resistance on the part of these cells, showing that they are more or less refractory to the action of the rabic virus, and it is due to this greater resistance on their part that they are able to encapsulate and sequestrate the parasite of rabies. He accepts as the actual parasite certain fine granules, round, black or blue (with the Cajal-Giemsa stain), found exclusively in the protoplasm of the degenerated nerve cells in the most severely affected parts of the nervous system. These granules represent the parasites in their full activity, while the Negri bodies, which are found only in cells little if at all modified, and not intimately connected with the principal symptoms of the disease, represent encapsulated forms of the parasites, in a phase of involution or transformation.

Semaine Médicale, Paris.

48 (XXVI, Nos. 40-41.) *Le rachitisme congénital. A. B. Marfan.
49 (No. 43.) Chirurgiens et appendice vermiforme. H. Vuillet.

48. **Congenital Rickets.**—Marfan believes that any toxic or infectious cause acting on the bones at a certain stage of their development during the last months of intrauterine life or the first or second year of infancy may create rachitis, provided that its action in this line is rendered possible by some native predisposition, the nature of which is still a mystery, but which is sometimes revealed by the multiplicity of cases of rachitis in the same family. He accepts four forms of rachitis: The latent congenital; the pronounced form in which the children are born dead or non-viable; the form in which the deformities in the bones are extensive and characteristic but do not continue a progressive course after birth, and gradually subside toward the end of the second year, and a fourth variety, in which the only sign of the condition at birth is the softening of the bones of the skull, especially the occipital bone. This true craniotabes may be isolated or accompanied by a slight protrusion of the anterior end of the ribs. In this form the rachitis continues a progressive course, as a rule, and characteristic deformities of the skull, thorax and limbs develop later. However, if the child escapes serious infections and is well cared for, the rachitis may remain insignificant and disappear finally without leaving definite deformity. In the two last mentioned forms the children are generally born before term, with a weight inferior to normal, and with more or less pronounced anemia during their first two years of life. In almost every instance of congenital rachitis the mother has had infections, intoxications or has been overworked during her pregnancy. Inherited syphilis has also been incriminated.

Jahrbuch f. Kinderheilkunde, Berlin.

Last indexed, page 1063.

50 (LXIV, No. 2.) *Ueber die Rhinitiden der Säuglinge (of infants). F. von Torday (Budapest).
51 *Zur Physiologie und Pathologie der Thymus. K. Basch (Prague).
52 *Beeinflussung von Infections-Krankheiten durch Vaccination. P. V. Jesierski.
53 Nahrungsmengen eines gesunden Brustkindes und Energieverbrauch des gleichen Säuglings nach der Entwöhnung. E. Feer (Basle).
54 Zur Frage der intestinalen Eiweiss-Resorption (absorption of albumin). A. Uffenheimer. Id. P. H. Römer and H. Much.
55 (No. 3.) *Zur Dauer der Immunität nach Injektion von Diphtherie-Heil-Serum. P. Sittler.
56 Kinder-Tetanie (Spasmophilie) und Epithelkörperchen. W. Stoeltzner.

50. **Rhinitis in Infants.**—The importance of curing rhinitis in infants is emphasized by von Torday's experience in 18 cases. In some cases death followed the purulent rhinitis without any complications; in some others pyemia with purulent peritonitis was the outcome. The obstruction to breathing and nursing is only a small part of the disturbances due to rhinitis in young infants. As the infant is compelled to breathe through its mouth, while throat and tonsils are still undeveloped, the danger of infection becomes much greater. Vaginal infection during birth, he states, is probably responsible for a number of cases of rhinitis. Since the introduction of the suprarenal preparations the infants' condition can be much improved, especially if the secretions are aspirated from the nose beforehand. A few drops of a 1 per cent. silver nitrate solution or of 3 per cent. peroxid of hydrogen afterward will be found useful. On suspicion of diphtheria, antitoxin should be injected without waiting for bacteriologic confirmation. Six of Torday's 18 cases terminated fatally. Streptococci and staphylococci were found in these cases.

51. **Physiology and Pathology of the Thymus.**—Basch gives the findings in 64 illustrations on a dozen plates showing the effects of removal of the thymus on the growth of animals, also on the healing of fractures and other injuries of the bones. The results all indicate a connection between normal growth of the bones and the functioning of the thymus. When the growth is defective, at an age when the thymus is still progressively developing, the deficiency in growth may be due to some disturbance in the functioning of the thymus, and the development of the thymus should be studied with greater care.

52. **Influencing of Infectious Diseases by Vaccination.**—The experiences related demonstrate that vaccination has an injurious influence on an already established or incubating infection, especially scarlet fever, when the individuals have not been vaccinated before. The course of tuberculosis, typhoid fever and leprosy did not seem to be affected by the vaccination. In two or three cases the vaccination in the course of scarlet fever was followed by the development a few days later of varicella, the three infections running their course together, and not a very stormy one.

55. **Duration of Immunization After Injection of Diphtheria Antitoxin.**—Sittler states that the protection conferred lasts for three or five weeks or more when the immunized children are not in frequent contact with diphtheria patients or convalescents. When they are with them constantly the immunization can not be relied on for more than from 10 to 14 days. Catarrhal affections of any kind and injuries of the mucosæ afford a strong predisposition for diphtheria, even in immunized children, which is able at times to shorten materially the period of protection conferred by the injection of antitoxin. After diphtheria plus injection of antitoxin, the child is liable to contract the disease again if opportunity offers as soon as after injection of antitoxin alone. General exanthemata resembling scarlet fever, even when they run an afebrile course and the throat is not much affected, must be regarded as genuine scarlet fever in the majority of cases. It is wiser to take proper measures for isolation rather than to submit the child to repeated injections of diphtheria antitoxin, for fear of developing the phenomenon of "anaphylaxis" or oversusceptibility. The communication issues from Koht's pediatric clinic at Strasburg.

Münchener medizinische Wochenschrift.

57 (LIII, No. 37.) Relations Between Sexual Life and Origin of Mental Affections.—Die Beziehungen des sexuellen Lebens zur Entstehung von Nerven- und Geisteskrankheiten. G. Aschaffenburg.
58 *Ueber eine Massen-Vergiftungs-Epidemie mit Bohnengemüse (intoxication from canned beans). Rolly.

59 Geburten mit Skopolamin-Morphium (childbirths). Hochelsen.
60 Reflex Inhibition of Kidney Secretion During Cystoscopy.—Ueber reflektorische Hemmung der Nierensekretion während der Zystoskopie. G. Grund.
61 *Günstige Beeinflussung der chronischen Bronchitis und des Bronchialasthmas durch Röntgen-Strahlen (favorable influence of *x*-ray treatment). T. Schilling.
62 Prostatitis Chronica cystoparetica. B. Goldberg.
63 *Die Unterbindung der Beckenvenen bei der pyämischen Form des Kindbettfiebers (ligature of pelvic veins in puerperal fever). G. Friedemann.
64 *Epileptiker als Autofahrer (as automobilists). F. Thalwitzer.
65 (No. 38.) Erfahrungen mit der Bierschen Stauung (artificially induced hyperemia). Lindenstein.
66 Formation of Cholesterin in the Gall Bladder.—Zur Frage der Cholesterinbildung in der Gallenblase. L. Aschoff.
67 *Artificial Delivery in Practice.—Die künstliche Frühgeburt in der Praxis. O. Polano.
68 Ueber vaginalen Bauchschnitt (celiotomy). Dührssen.
69 *Combination of Scopolamin-Morphin and Spinal Anesthesia.—Ueber die Verbindung von Morph.-Scop.-Injektionen mit Rückenmarksanästhesie bei gynäkologischen Operationen. W. Busse.
70 *Roentgen-Strahlen und Stoffwechsel (*x*-rays and metabolism). E. Benjamin and A. V. Reuss.
71 Die Präzipitat-Reaktion. W. Fornet.
72 Improved Culture Medium for Typhoid Bacilli. — Ueber Typhusanreicherung. W. Meyerstein.
73 *Influence of Great Physical Exertion on Circulatory Apparatus, Kidneys and Nervous System.—Einfluss grosser Körperanstrengungen auf Zirkulations-Apparat, Nieren und Nerven-System. Baides, Heichelheim and Metzger.
74 Embolische Nekrose der Glutaeal-Muskulatur. H. Heineke.
75 *Geburten mit Skopolamin-Morphium (in obstetrics). Hochelsen. (Concluded.)
76 Brucheinklemmung der Appendices epiploicae und ihre Folgen (hernial incarceration). G. Muscatello.
77 Incubator.—Ein neues Couvensen-Modell für die Behandlung frühgeborener und schwächlicher Kinder. O. Rommel.
78 Hilfsmassnahmen bei der Zerstörung von San Francisco. C. Beck (New York).

58. Poisoning from Canned Beans.—Rolly found the colon bacillus and also the paratyphoid bacillus in some canned green beans which had been eaten freely at dinner by the men in a warehouse at Leipsic. In about 20 hours they began to come to the hospital for relief from symptoms of severe enteritis, chills, nausea, vomiting, headache, vertigo, diarrhea, etc. The first symptoms were noticed in some cases as early as four hours after eating the beans. The disturbances lasted for two, three or four days, and all the persons affected—a total of 250—gradually recovered. The beans had been heated, but not to boiling point. The intoxication was probably the result of the metabolic products of these bacteria. The prevalence of the gastric symptoms indicated that the trouble was due to ingested toxins rather than to the direct action of bacteria.

61. Favorable Influence of X-Rays on Chronic Bronchial Affections.—Schilling had occasion to examine a patient with severe bronchial asthma and used the *x*-rays to determine the exact status of the air passages. The patient found that his asthma was favorably influenced by the fluoroscopy, and Schilling thereafter applied the *x*-rays systematically in a large number of cases of chronic bronchitis and bronchial asthma. He tabulates the results as determined by the amount of sputum. In one case it dropped from 150 c.c. to 80 c.c. in three days after the *x*-ray exposure. Another patient, a man of 62, had been coughing and expectorating for months. The day before the *x*-ray exposure the amount of sputum was 170 c.c., the day following 140, then 110, 50, and decreased to 40 c.c. by the sixteenth day, and expectoration had entirely ceased by the end of the fifth week. In every instance the amount of sputum dropped nearly one-half the day after the exposure, and progressively declined thereafter. Every patient was favorably influenced, and the improvement or the complete cessation of the expectoration and asthma persisted for months. He suggests as explanation of the unmistakable and prompt benefit derived that possibly the proliferating cells of the microscopic glands in the bronchi react to the rays, similarly to the effect observed in *x*-ray treatment of hypertrophied prostate, lymphoma, goiter, etc. The extreme permeability of the lungs for the *x*-rays aids in the process. He used a 30 cm. inductor, the patients were seated, and the exposure was made from two, four or more directions, at the points where the rattling was most pronounced, avoiding those where the muscles were especially thick. The unexposed parts were protected against the rays, and the exposure lasted from 10 to 15 or 20 minutes, the distance from the tube being about 15 cm. The total of the exposures was kept within the range of the maximal dose and only a single sitting was given. Notwithstanding the unmistakable relief from excessive bronchial secretion and from the tormenting asthma, Schilling reserves his opinion in regard to the actual therapeutic value of *x*-ray treatment of bronchial affections until he can speak from a larger experience.

63. Ligation of Pelvic Veins in Pyemic Form of Puerperal Fever.—Friedemann reports a case of exceptionally severe pyemic puerperal fever in which recovery followed promptly after both the veins in the connective tissue of the pelvis had been ligated on the right, and the ovarian vein on the left. They were reached by a laparotomy, and thrombi were evident in the veins. The vessels were tied with catgut, not excised. There were no chills after the operation, and little fever, the highest being on a day when thrombosis of the right femoral vein was observed. The leg was elevated and the symptoms subsided, as also those resulting from embolism in the lung observed several days before the laparotomy. By the end of the third month the patient was quite restored except that the decubitus had not quite healed.

64. Epileptics as Automobilists.—Thalwitzer reports two cases in which an automobile or motorcycle was proceeding along a smooth road at a moderate speed when the drivers suddenly ran them into the ditch with more or less damage to themselves and others. Each driver was found to be subject to epileptic seizures and had been affected with one at the time of the accident. He asks the authorities whether there should not be some regulation prohibiting automobiling to epileptics as a public danger.

67. Artificial Delivery.—Polano reviews 18 cases in which artificial delivery was induced at the Würzburg gynecologic clinic, the only ones out of a total of 1,952 maternity cases, including 119 contracted pelves, in the last three years. The particulars of the 18 cases are tabulated. They demonstrate that artificially induced premature delivery is far from being a simple operation, but one that makes great demands on the time and on the technical skill of the physician. The lessons learned from this material are: 1, In order to induce a pregnant uterus to contract well and effectively, in a comparatively short time, before natural term, decided stimuli are necessary, applied to the interior of the uterus, and alternating; 2, after the sensitiveness of the uterus has been dulled by the action of these coarse stimuli, it frequently fails to react afterward to more delicate stimuli, such as rupture of the membranes, hot vaginal douches, etc., so that after expulsion of the balloon no further uterine contractions may be observed for days; 3, the completely dilated os may later contract after expulsion of the balloon, so that the extraction of the fetus later may be attended with the greatest difficulty, and 4, the variations in pressure, after expulsion of the balloon, are liable to endanger the life of the child, a fact manifested clinically in the variations in the fetal heart sounds to complete intrauterine cessation. To escape all these eventualities it is necessary to terminate the delivery as soon as the balloon has enlarged the os sufficiently. The patient is prepared the day beforehand with hot vaginal antiseptic douches and full baths. This almost always starts slight uterine contractions, sufficient to allow the introduction of a metreurynter, inserted through a speculum, with the vaginal portion of the cervix drawn down with a retractor. If the cervix is too narrow, it is dilated to a finger's breadth with a metal dilator. The metreurynter is boiled and scrubbed with soap, alcohol and bichlorid, or is kept in a mixture of one part of a 1 per 1,000 bichlorid solution to 2 parts glycerin. It is previously tested with a graduated syringe; its circumference, filled, should not exceed 35 cm. It is twisted into a roll and inserted through the internal os and then filled at once to its full capacity. The irritation from the balloon can be varied by allowing 100 c.c. of fluid to escape and then refilling the balloon, or by alternating traction on the tube. When the os is sufficiently enlarged, whether the metreurynter has been expelled or not, it is removed at once and after rupture of the membranes the child is delivered under chloroform. Long tamponing and the prolonged use of tents offer so many chances for infection that they should be discarded. Polano refers casually to a case in which a physician felt constrained to interrupt the pregnancy of a tuberculous woman. He used laminaria tents for several weeks

and accomplished his purpose, but the woman died of septic infection during the puerperium, and the case came into the courts.

69. **Combination of Scopolamin-Morphin and Spinal Anesthesia in 150 Gynecologic Operations.**—Busse advocates this combination for gynecologic operations in all cases of cardiac defects with good pulse, in case of pulmonary affections, of arteriosclerosis, and for the aged. It enables the surgeon to perform several needed operations at one time. The consequences of this combined form of anesthesia seem to be less annoying than under other conditions. The only contraindications which he recognizes are extreme obesity, rendering the spinal injection difficult, weak pulse, extreme nervousness and excitement.

70. **Roentgen Rays and Metabolism.**—This communication proceeds from Escherich's clinic and Holzknecht's Roentgen laboratory at Vienna. The writers have been able to demonstrate that the phenomenon of the splitting of lecithin, as in the yolk of an egg, under the influence of the Roentgen rays, occurs likewise in the living body. They detected the product of the splitting of the lecithin—the cholin—in large proportions in the blood and organs of rabbits long submitted to the action of the *x*-rays. Further experiments with a dog and comparison of the results published from various clinics seem to show that the lecithin and allied substances are principally affected by exposure to the Roentgen rays. This is evidenced by the parallelism between the changes in the blood (the rapidly transient hyperleucocytosis), the anatomic changes ("the explosive destruction of the lymphoid tissue which reaches its height and declines again within from 24 to 36 hours"), the appearance and rapid vanishing of cholin in the blood, and the great increase in phosphates in the urine. The normal organism seems to react to extensive exposures to the *x*-rays with a moderate increase in the amount of nitrogen eliminated, lasting for several days, and principally affecting the basic N, and with a rapidly appearing but very transient increase in the elimination of phosphates followed by prolonged under-elimination.

73. **Effect of Great Physical Exertion on Kidneys, Nervous System, Etc.**—See editorial in THE JOURNAL on page 1380.

75. **Scopolamin-Morphin in Obstetrics.**—Hocheisen used this method of anesthesia in 100 uncomplicated deliveries, and his impressions were not favorable. By-effects were observed in 70 per cent. of the cases, and in 50 per cent. the course of delivery was unmistakably prolonged by the anesthesia.

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Last indexed, page 1775.

79 (LX, Nos. 3-4.) Influence of Diseases on the Economy of Energy During Repose.—Einfluss von Krankheiten auf den Energiehaushalt im Ruhezustand. A. Magnus-Levy.

80 °Changes in Concentration of Blood Serum After Intake of Water.—Die Concentrationsveränderung des Blutserums nach Wasseraufnahme. K. Engel and F. Scharl.

81 °Limitations of Perception of Speech.—Grenzen der sprachlichen Perceptionen. H. Gutzmann.

82 °Zur Diagnosis der Halsrippen (cervical ribs). W. von Rutkowski.

83 Ueber Nachweis und Auftreten gelösten Eiweisses in den Fäces Erwachsener (dissolved albumin in feces of adults). H. Schloessmann.

84 °Diagnostic Importance of Resonance of Spine on Percussion. —Ueber den Perkussionsschall der Wirbelsäule und dessen diagnostische Verwertung. F. von Koranyi (Budapest).

85 Sarcoma in Dura with Calcified Metastases in Heart.—Hirnhautsarkom mit zahlreichen Kalkmetastasen im Herzen. P. Lazarus and C. Davidsohn.

86 Der Alkohol in der Ernährung der Zuckerkranken (in nourishment of diabetics). H. Benedict and B. Torök (Budapest).

87 Cancer in Sacrum.—Fall von Krebsgeschwulst des Kreuzbeins. E. von Leyden and L. Bassenge.

80. **Concentration of Blood Serum After Taking Much Water.**—Engel and Scharl were unable to discover that the blood serum became less concentrated after ingestion of large amounts of water followed by copious voiding of urine. No hydremia to speak of is observed under such conditions either in the healthy or in those with kidney affections. On the contrary, an actual increase in the concentration of the blood serum may be noticed sometimes at the time of the greatest diuresis.

81. **Limitations of Perception of Speech.**—Gutzmann believes that the limits of speech perception might be considerably enlarged by the use of the eye and other means to take advantage of various objective factors in spoken speech beside the movements of the lips. His tests were made mostly over the telephone or in the same room with averted eyes, using arbitrary, meaningless syllables, and with the same syllables repeated under the eyes of the listener.

82. **Diagnosis of Cervical Ribs.**—A case of bilateral cervicobrachial neuralgia in a man of 60 was shown by the Roentgen rays to be due to compression from cervical ribs. The patient had always been robust until the bilateral neuralgia developed at 59. The pain starts at the back of the neck and radiates into the arms, and the slightest movement or touch is agony. Outside of the attacks passive movements of the head to right or left are possible without pain, but bending forward causes pain localized in the cervical ribs and shoulders. The pains appear at once on reclining, and the patient sleeps in a chair. Large doses of morphin have scarcely any influence. The Roentgen rays showed a cervical rib on each side, corresponding to the seventh cervical vertebra. The patient has always stooped a little and shows signs of senile kyphosis, which has increased during the last few months. This kyphosis is probably responsible for the development of the neuralgia. Extension treatment, restoring the vertebræ to their natural position, has done good service in this case and rendered operative measures superfluous.

84. **Percussion of Spine.**—For 15 years Koranyi has been studying the percussion findings in the spine. He asserts that they are valuable from the standpoint of both diagnosis and prognosis. The spine has a resonance independent of that of the interspaces and abdominal cavity. The degree of resonance is determined by the anatomic conditions of the adjacent organs; any variation in these organs is revealed by a change in the percussion findings of the corresponding vertebræ. In some cases these percussion findings over the spine are the only physical signs of the affection in question. The above applies only to vertebræ that are sound. If they are pathologically altered the regular percussion findings become modified. With regard to the resonance the spine can be divided into five segments or zones. The findings are constant in normal conditions and also with certain changes in internal affections. He gives 18 illustrations to show the laws regulating the percussion findings, citing a number of cases as examples. Among them are two cases of vesicular emphysema in which the area of dulness that in the healthy individual reaches from the seventh cervical to the fourth or fifth dorsal spinal process, in these cases did not extend so low down and was much shorter in extent. In case of a mediastinal tumor the area of dulness is more extensive than under normal conditions, and the changes in its extent show whether the tumor is stationary or progressing. In one case an aneurism of the aorta was revealed by the usual physical signs and *x*-rays, but the spine also showed an area of dulness corresponding to the mediastinal tumor. Autopsy revealed two aneurisms on the aorta; the anterior one was on the ascending and the other on the descending aorta. The importance of these findings is best shown in cases suggesting aneurism of the aorta without physical signs in the anterior thorax. Percussion of the spine in the knee-elbow posture frequently reveals a greater movability on the part of the liver and spleen, even in the healthy, than would be supposed possible from ordinary percussion findings. In a case of wandering spleen and wandering liver there was no trace of either spleen or liver dulness on percussion of the spine and its vicinity. In another case the area of spinal dulness reached from the ninth dorsal vertebra without interruption to the fifth lumbar vertebra, as the patient stood. In changing to the knee-elbow position the area of dulness dropped down to the twelfth dorsal spinal process, extending thence to the fourth lumbar vertebra. The diagnosis of cyst of the pancreas was confirmed by the operation. In differentiation of hydrops of cardiac and of portal origin he states that in the former, the patient erect, the dulness reaches from the twelfth dorsal to the third lumbar spinal process, while there is resonance from the third lumbar spinal process to the sacrum. In portal hydrops the dulness reaches from the eleventh dorsal to the fourth lumbar spinal process, and there is resonance only at the fourth lumbar spinal pro-

ces. With the patient in the horizontal posture the area of dulness in cardiac hydrops is only at the eleventh dorsal spinal process, while the resonance extends from the twelfth dorsal to the fourth lumbar spinal process; in portal hydrops the dulness reaches from the eleventh dorsal to the second lumbar spinal process, and the resonance from the second to the fifth lumbar spinal process. In case of free ascites the upper limit of the dulness is horizontal, while in case of a cyst it varies with the shape and displacement of the organs. Illustrations of the findings, with the patient erect and reclining, accompany the nine cases cited.

Gazzetta degli Ospedali, Milan.
Last indexed, page 202.

88 (XXVII, No. 96.) Action of Radium on Virus of Rabies.—Azione del radio sul virus rabido. G. Tizzoni and A. Bongiovanni.

89 Superiority of Petteruti Test for Hydrochloric Acid.—Intorno ai metodi per l'analisi quantitativa dell' acido chloridrico del succo gastrico. M. Landolfi.

90 *Lime in Central Nervous System.—Il calcio contenuto nel sistema centrale in rapporto all' eclampsia, tetania ed equivalenti. T. Silvestri.

91 Influence of Temperature and of Cold Baths on Production of Agglutinating Substance in Animals Immunized Against Typhoid.—Influenza della temperatura ambiente, etc. A. Grastani.

92 (No. 99.) *Le solanacee ed il glucosio nella cura della ipercloridria. R. Rebizzi.

93 Sobre il potere hematogeno del manganese (blood producing property of manganese). G. Fiechini.

94 (No. 102.) Sindrome della coda equina. E. Tedeschi.

95 Istologia del testicolo nei casi di discesa incompleta del medesimo (histology of undescended testicle). U. Basso.

96 Sulle adenopatie veneree nel R. Esercito (in the Italian army). S. Puglisi.

97 (No. 103.) Sui rapporti fra le lesioni Sogistiche del pericardio e quelle delle valvole aortiche. S. Livierato.

98 L'influenza della fatica nei cani parzialmente sparatiroidati (influence of fatigue on dogs after partial removal of the parathyroids). A. Mosso.

99 Symptomatic Importance of Hemorrhagic Discharge from the Ear.—Sul valore semiologico delle otorragie spontanee nelle otopatie e nelle affezioni generali. L. Chierici.

90. Lack of Lime in Central Nervous System Cause of Eclampsia, Tetany and Spasmophilia.—Silvestri advances a number of arguments to sustain his assertion that a lack of lime in the central nervous system is responsible for the convulsions of children, for eclampsia, etc. Stefani has shown that in various mental affections the elimination of lime far surpasses the normal proportions. Sabbatani has found that small doses of lime in contact with the cortex of the brain arrest at once experimental epileptic seizures induced by drugs. Quest has also shown that in the new-born the proportion of lime in the brain is comparatively high and gradually declines to a minimum, lasting from the sixth month to the third year, which is the special age for convulsions in children. Quest also noticed that the proportion of lime in the brains of children with tetany was much below normal. Convulsions are frequently observed in the course of rachitis, in which the lime metabolism is much deranged. For these and other reasons Silvestri assumes that the maternal organism loses an undue proportion of lime to the fetus during the last weeks and days of pregnancy, and this deficiency of lime is liable to be felt by the central nervous system and to induce serious consequences. He has observed also in two eclamptics that the elimination of lime much exceeded the intake. Still another argument is the presence of lime in the milk.

92. Treatment of Hyperchlorhydria.—Rebizzi describes his experiences with eight patients with hyperchlorhydria taking a test breakfast or test meal nearly every day with examination of the stomach content. They were treated with glucose, atropin or a mixture of equal parts of tincture of stramonium, belladonna and hyoscyamus, the dose of the latter being 20 drops morning and night. The effect of the last two was most excellent in the cases of primary hyperchlorhydria, not quite so good in the hyperchlorhydria associated with gastric ulcer, and dubious in hyperchlorhydria associated with neurasthenia. The glucose did not seem to produce much effect.

Riforma Medica, Naples.
Last indexed, page 1119.

100 (XXII, No. 36.) *Physiopathology of the Lymph and Blood Circulation.—Fisiopatologia della circolazioni linfatica e sanguigna, etc. G. Boeri.

101 *Defect in Interventricular Septum.—Intorno ad un caso di malattia del Roger. F. Fabris.

102 The 2 Echinococcus Scoliecs.—I due scolici echinococcici. G. Rocchi.

103 (No. 37.) Il solfuro di carbonio nella cura della polmonite fibrinosa (carbon bisulphid). L. Mascianglioli.

104 *Sulla conservazione del virus rabbico in glicerina. T. Manzoni.

105 (No. 38.) *Recurrent or Supplementary Sensibility.—Sulla cosi detta sensibilita ricorrente o suppletiva. S. Pansini. (Commenced in No. 37.)

106 Sulla resistenza del virus rabbico alla putrefazione. T. Manzoni.

107 (No. 39.) *Caso interessante di neurofibromatosi diffusa. C. Pastine. (Commenced in No. 37.)

108 (No. 40.) *I riflessi viscerali delle pupille e l'anisocoria splenica (pupil reflexes originating in the viscera). A. Signorelli (Baccelli's clinic Rome).

109 *Contributo alla chirurgia cerebrale (lobi frontali). F. Sorrentino.

100. Defensive Action of Lymph and Blood in Regard to Bacteria and Toxins.—Boeri announces the results of three years of experimental research on the lymph and blood systems in regard to their behavior toward bacteria and soluble toxins introduced into the organism. He found that bacteria do not pass into the blood vessels, but are taken up by the lymphatics and traverse a long and varied route before they reach the blood. Soluble toxins, on the other hand, pass readily through the walls of the blood vessels. This difference is due exclusively to physical properties. In the lymph system the bacteria are filtered, arrested to some extent, and attenuated, and there is also an immunizing action against them, but the lymph has no bactericidal and antitoxic action like the blood.

101. Defect in the Septum of the Ventricles.—Fabris describes a case of congenital defect in the upper part of the septum of the ventricles. The patient was a girl of 11 and she suffered no appreciable inconvenience from the defect. There was no cyanosis, but an intense systolic fremitus and a rough, protracted murmur were audible, loudest at the upper third of the precordial region. He studies the condition from various points of view, showing that the defect becomes compensated by ectasia of the pulmonary artery. The arterial system shows hypoplasia throughout, but the condition does not cause much disturbance unless associated with tuberculous lesions to which it affords a predisposition. This special form of defect in the septum is known as Roger's disease.

104. Preservation of Virus of Rabies in Glycerin.—Manzoni says that material from rabid animals can be preserved in glycerin, without affecting the Negri bodies, for as long as 80 days.

105. Recurrent or Supplementary Sensibility.—Pansini's monograph on this subject is based on two cases of stab wounds severing the radial or the brachial nerves. After the stumps were sutured sensibility returned in the anesthetic region, from the periphery toward the center, advancing concentrically. This also occurred in two other cases observed. He calls attention to a peculiar zone of hyperesthesia which surrounds the patch of anesthesia in many instances. These and other facts which he cites have convinced him that anastomosis is liable to occur between the peripheral terminals of the nerves just as it occurs in the circulation of the blood. He adds the bibliography of the subject.

107. Diffuse Neurofibromatosis.—Pastine gives the details of an interesting case of this kind and reviews recent contributions on the subject of true and false neuroma, myxoma, malignant sarcoma and Recklinghausen's disease. In his case the physical and functional disturbances were all on the left side of the body. There were no signs of degeneracy, no traumatism, no infections nor intoxications except possibly abuse of coffee. The first symptoms were observed at 67, and the course of the affection has been comparatively mild during the two years since. The patient complains of neuralgia in the left cervico-brachial and cervico-occipital plexuses. The pains are not continuous and there is no paralysis, atrophy, anesthesia or degeneration of the nerves, but there is trigeminal neuralgia, involving all three branches of the nerves, with total facial paralysis, probably from some lesion in the intracranial portion of the facialis. The auditory nerve is also affected. He assumes a neurofibroma developing on the latter and involving the other nerves, or one on each nerve. A certain incoordination of the movements of the left forearm is also noticeable.

108. The Visceral Pupil Reflexes.—Signorelli has been studying the pupil reflexes elicited by irritation from the viscera or cavities of the body. The changes in the pupils from excitation from some viscus, without the intermediation of the central nervous system, allow the diagnosis of the seat of the given morbid process on one side or other of the body, as the pupil on that side is the one that responds. The pupil reflex is observed transiently in acute and chronic tonsillitis, in glandular tumors, affections of the thyroid, of the lungs, mediastinum, heart and large vessels and of the spleen. In malaria, typhoid and other affections accompanied by enlargement of the spleen disturbances in the pupils are noted almost constantly, the left pupil being dilated more than the other. This reflex dilatation of the left pupil may be regarded as a generic symptom of trouble in the spleen.

109. Surgery of the Frontal Lobes.—Sorrentino's case confirms anew the ease and efficacy of operations on the frontal lobes, even with severe traumatism. The results are generally good if no septic process interferes with the healing of the primary lesion or that of the operative wound. The case also demonstrates that Jacksonian epilepsy may develop from lesions far from the motor centers. The effusion of blood and the softening of the brain substance in the case described, being in the frontal lobe, certainly could inflict no direct injury on the motor centers. The assumption that the frontal lobe is the seat of the memory is sustained by this case, as the patient had no recollection of the events following the injury up to the time of the operation. The case further shows that the hernia of the brain can be effectually controlled by gradual compression.

Nordiskt Medicinskt Arkiv, Stockholm.
Last indexed, XLVI, pages 1815 and 1824.

110 (XXXVIII, Surgery, Nos. 3-4.) *Zur Kenntnis der Tuben-Graviditat. A. R. Limnell.
111 Behandlung der Luxatio coxæ congenita. V. Bülow-Hansen.
112 *Ueber Blasenbrüche (hernia of bladder). P. N. Hansen.
113 3 Fälle von Nierenstein, mittels Roentgen-Photographie diagnostizierl. G. Naumann and K. A. Wallin.
114 *Experimentelle Erböhung der molekulären Konsentration des Blutes (of blood). G. Ekehorn.
115 *Study of Earliest Development of Digestive Tract and of Atresia of Intestine or Esophagus.—Om de kongenitala tarm- och esophagusatresiernas patologiska anatomi och aetiologi. H. Forssner.

110. Tubal Pregnancy.—Limnell reviews the experience at Helsingfors with 90 cases of tubal pregnancy in which an operation was performed.

112. Hernia of the Bladder.—Hansen summarizes the details in seven cases of hernia involving the bladder. The patients were between the ages of 41 and 67, and all but one were males. In only one case was the diagnosis made before the operation. Hermes has reported that in only three out of 53 cases of cystocele on record was the diagnosis made before surgical intervention. If the cystocele is small, or if it is an operative cystocele, it will be found growing thicker upward, enveloped in fat, and this thicker extension will be discovered to be the bladder. When the prevesical fat is detached the bladder appears. In case of doubt the bladder can be filled with fluid and the effect watched on the cystocele. In presence of a diverticulum or a stone in the hernia, the bladder must be opened and resected; otherwise the bladder is reduced unopened. In case of injury, the bladder must be sutured, a permanent catheter inserted and the herniotomy wound drained.

114. Experimental Increase in Concentration of Blood.—Ekehorn describes five cases of various kidney affections in which restriction of the intake of fluids sent the freezing point of the blood from —0.50 to —0.63 or thereabouts. In health, restriction of fluids to 600 c.c. a day for two or three days does not affect the freezing point of the blood, but the urine becomes more concentrated. The same is observed in cases of acute hemorrhagic nephritis, acute infectious nephritis and acute nephritis, as he shows by concrete examples. On the other hand, in a case of bilateral tuberculosis of the kidneys the freezing point of the blood was —0.57 at first, and it became —0.63 by the end of the third day of restriction of fluids, as also in a case of left pyonephrosis and right kidney stone. In a case of chronic parenchymatous nephritis, with commencing contraction, the freezing point of the blood changed from —0.59 to —0.63. In a case of hypertrophied prostate with retention and chronic cystitis and contracted kidney the change was from —0.55 to —0.62. In another case of right infected hydronephrosis, treated by nephrectomy, accompanied by left pyelonephritis (nephrolithiasis), the change was from —0.57 to —0.61 when the test was made, about seven weeks after the operation. All the cases in which the freezing point of the blood was thus altered had the common feature that the output of urine was large and its specific gravity low. During restriction of fluids the amount of urine diminished, in some cases considerably, but the specific gravity did not rise to correspond. The specific gravity of the urine was only slightly increased as the kidneys in these cases are incapable of secreting a concentrated urine. A functionally capable of kidney secretes urine in which the specific gravity increases as the quantity of urine declines.

115. Research on Atresia of Intestine and Esophagus.—Forssner's comprehensive monograph fills about 140 pages and is profusely illustrated. He studies the development of the digestive tract from its beginnings, his research including comparative embryology and wide clinical experience.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

Genito-Urinary Diseases and Syphilis. By H. H. Morton, M.D., Clinical Professor of Genito-Urinary Diseases in the Long Island College Hospital, Genito-Urinary Surgeon to the Long Island and Kings County Hospitals and the Polhemus Memorial Clinic. Illustrated with 158 half-tones and photo-engravings, and 7 full-page color-plates. Second edition, revised and enlarged. Cloth. Pp. 500. Price, $4.00 net. Philadelphia: F. A. Davis Company, 1906.

Text-Book on Diseases of the Heart. By G. Steell, M.D., F.R.C.P., Lecturer on Diseases of the Heart in the University of Manchester; Senior Physician to the Manchester Royal Infirmary, with an appendix on the Volume of Blood in Relation to Heart Disease, By J. L. Smith, M.A., M.D., Professor of Pathology in the University of Manchester. Cloth. Pp. 389. Price, $2.00 net. Philadelphia: P. Blakiston's Son & Co., 1906.

A History of Chemistry. From Earliest Times to the Present Day. Being also an Introduction to the Study of the Science. By E. von Meyer, Ph.D., Professor of Chemistry in the Technical High School, Dresden. Translated with the Author's Sanction by G. McGowan, Ph.D. Third English Edition, etc. Cloth. Pp. 691. Price, $4.25 net. New York: The MacMillan Company, 1906.

Surgery, Its Principles and Practice. By Various Authors. Edited by W. W. Keen, M.D., LL.D., Professor of Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. I. With 261 Illustrations and 117 Colored Plates. Cloth. Pp. 983. Price, $7.00 net. Philadelphia: W. B. Saunders Company, 1906.

Diseases of Children, Medical and Surgical. By H. Ashby, M.D., F.R.C.P., Physician to the Manchester Children's Hospital, etc., and G. A. Wright, B.A., M.B., F.R.C.S., Surgeon to the Manchester Royal Infirmary, etc. Fifth edition, thoroughly revised. Cloth. Pp. 920. Price, $5.50 net. New York: Longmans, Green & Co., 1906.

Indications for Operation, in Disease of the Internal Organs. By Prof. H. Schlesinger, M.D., Extraordinary Professor of Medicine in the University of Vienna. Authorized Translation by K. W. Monsarrat, M.B., F.R.C.S., Surgeon to the Northern Hospital, Liverpool. Cloth. Pp. 498. Price, $3.00. New York: E. B. Treat & Co., 1906.

A Compend of Genito-Urinary Diseases and Syphilis, Including their Surgery and Treatment. By C. S. Hirsch, M.D., assistant in the Genito-Urinary Surgical Department Jefferson Medical College Hospital. Illustrated. Cloth. Pp. 351. Price, $1.00. Philadelphia: P. Blakiston's Son & Co., 1906.

Report of the Veterinary Director General. J. G. Rutherford, V.S., Department of Agriculture, Canada. 1905. Printed by Order of Parliament. Paper. Pp. 232. Ottawa: Printed by S. E. Dawson, Printer to the King's Most Excellent Majesty, 1906.

Experiments in Practical Culicidal Fumigation. By A. I. Kendall, Ph.D., Acting Chief of Laboratory. Bulletin No. 2. Laboratory of the Board of Health, Isthmian Canal Commission. Paper. Pp. 22. Washington: Government Printing Office, 1906.

Limitations of Formaldehyd Gas as a Disinfectant, With Special Reference to Car Sanitation. By T. R. McClintic. Hygienic Laboratory—Bulletin, No. 27. April 9, 1906. Paper. Pp. 112. Washington: Government Printing Office, 1906.

Medizinische Anwendungen der Elektrizität von M. U. Dr. S. Jellinek. Mit 149 Abbildungen im Text. Paper. Pp. 453. Munich: Druck und Verlag von R. Oldenbourg, 1906.

Report of the Surgeon-General of the Army to the Secretary of War for the Fiscal Year Ending June 30, 1906. Paper. Pp. 179. Washington: Government Printing Office, 1906.